



The Condensed CHEMICAL DICTIONARY

A reference volume for all requiring quick access to a large amount of essential data regarding chemicals, and other substances used in manufacturing and laboratory work

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Preface

The increased importance of the chemical industries has brought into contact with these industries a large number of people not educated along chemical lines. Exporters and importers, brokers and jobbers, financial houses, lawyers, librarians, purchasing agents, insurance companies and many other classes of firms and individuals have frequent need for detailed information regarding chemicals and chemical products.

The large and constantly increasing volume of such inquiries received by the Information Bureau of The Chemical Catalog Company, Inc., as well as by the public and technical libraries, has made obvious the demand existing for some one book that would supply the outstanding facts regarding the various chemicals and chemical materials ordinarily met with in commerce.

Professional chemists and chemical engineers may find it hard to appreciate that there are large numbers of people in various branches of trade who have to use or buy or sell chemical products (or who have professional or financial relations with firms doing so), who have not the least idea how to secure information on the most elemental points.

The fact that the Information Bureau of The Chemical Catalog Company, Inc., is called on almost daily to answer such questions as "Is acetone a solid or a liquid?", "Is sulfuric acid explosive?", "What is alum used for?", "What is the boiling point of toluol?", "Where does perilla oil come from?", etc., shows that the sources of such information are none too available to non-professionals.

Moreover, after asking a number of such questions, the inquirers would frequently ask, "Is there no book where we can look up things like this for ourselves? We often need information like this in our business."

A thorough search of chemical literature revealed no publication that would meet exactly the requirements of these people. Undoubtedly a collection of literature could be made that would give all the facts commonly needed, but few business men would be likely to go to the expense of accumulating such a library. The excellent facilities of the public technical libraries avail little, as business men have not the time to visit them, and moreover, good technical libraries are not convenient to all trade and manufacturing centers. Finally, the books in which the information could be obtained would contain so much more commer-

cially irrelevant material that men unaccustomed* to the use of large scientific reference works would soon be in difficulties.

One of the most frequent classes of inquiries concerned the uses of things. Importers and brokers would frequently find chemicals, oils, ores, etc., on their hands, the market for which was unfamiliar. In order to find whom to approach, it was necessary first to know the uses of the substances. In the Condensed Chemical Dictionary an attempt has been made to collect a mass of information on this subject scattered through hundreds of textbooks, periodicals, government bulletins, etc., as well as to set down a great deal that is not known to be anywhere in print.

The only solution of the above problem seemed to be the compilation of a new reference book that would meet the requirements we have attempted to outline in the previous paragraphs. Consequently, early in 1918 the work of compilation was begun by the Editorial Staff of The Chemical Catalog Company, Inc.

No attempt has been made to produce an exhaustive work. In addition to properties and uses it was thought advisable to insert brief notes as to how things are manufactured, when they are not natural products. These notes have been restricted to giving a very general idea of the process and are not intended to instruct anyone in the manufacture of the substances in question.

The properties described have been restricted to those likely to be of commercial importance, and many substances scientifically interesting have, in the interest of brevity, been omitted entirely when of no commercial importance.

While the great value of this Dictionary to the non-technical user is very apparent, it must not be lost sight of that to the chemist, even one having access to a good library, the book is invaluable as a time-saver.

Frequently a moment's reference to the Dictionary will answer a question, whereas much more time would be consumed in getting the same information from other sources. It is believed by the editors and publishers that the Dictionary will soon make a place for itself close to the hand of any chemist.

Every precaution has been taken to make the book accurate and complete within the limits set for it. In all probability some errors and omissions will be noted and the editors will be very grateful for having their attention drawn to such matters so that corrections can be made in future editions.

On a subsequent page, acknowledgment is made of the generous assistance numerous chemists, chemical engineers and others have given in connection with the compilation of the book.

THE EDITORS.

New York, September 1st, 1919.

Acknowledgments

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Explanation of the Arrangement, Terms and Symbols used in this Volume

The Dictionary is arranged in a straight alphabetical classification. Thus, "Methyl Alcohol" is under "M", not "Alcohol, Methyl." The only deviation from this rule is in the case of acids, all of which are grouped together under "A" with cross-references under the name proper, thus: "Sulfuric Acid. See Acid sulfuric."

Cross-Indexing:—The Dictionary has been carefully cross-indexed as a further assistance toward ready location of items sought.

Organic Nomenclature:—Organic derivatives in the names of which the prefixed "meta-", "ortho-" "para-", "alpha-" and "beta-" occur are listed under the main name. For instance, look for "Naphthol, Beta-" under "N", not "Beta-naphthol" under "B".

Spelling:—Spelling follows the rules of the American Chemical Society, as used in Chemical Abstracts, and where some other spelling is commercially in use and differs materially from the A. C. S. standard, a cross-indexing will be found.

Temperatures:—Temperatures are given in degrees Centigrade. A conversion table will be found on page 514 for those who desire Fahrenheit temperatures.

Densities:—Tables giving the relations for Baumé degrees and Specific Gravities (Densities) for liquids both heavier and lighter than water will be found on pages 523 and 524.

Formula (Molecular) Weights:—Formula (Molecular) Weights are not given, but a table of Combining (Atomic) weights is given on page 511, and the formula weights may be calculated from that table and the formulas given.

Made in America:—An asterisk (*) has been used to indicate those substances that, according to the best information available, are now made in America, many of which were not made here before the Great War. As some of these were strictly war products, the manufacture of which in this country may have been discontinued, the editors will appreciate corrections and additions.

Proprietary Names:—Important trade and proprietary names have been included, as it is frequently not recognized in trade that those names are of a proprietary nature. Where a proprietary name is given it is generally stated that it is such.

Dyestuffs:—No attempt has been made to complete the information

given regarding synthetic dyestuffs, as excellent reference works exist on that subject, and the inclusion of the complete information would unnecessarily expand the Dictionary. It has, however, been deemed advisable to include those dyestuffs, the names of which do not indicate that they are dyestuffs, for the reason that inquiries are frequently made in commerce with regard to these substances, and the people to whom the inquiries are addressed do not know whether they are dyestuffs or drugs or what not.

Containers:—In addition to the containers mentioned for the various chemicals, glass bottles may always be inferred when small amounts are under consideration.

Grades:—The terms U. S. P. and B. P. used under Grades refer respectively to the United States Pharmacopeia and British Pharmacopeia, and signify that the substances are sold under the mark "U. S. P." or "B. P." and comply with the requirements of these standards as to quality, purity, etc. The grade "C. P." is usually the purest obtainable. The grade "Technical" is the ordinary commercial product and may be crude, pure or "C. P."

Railroad Shipping Regulations:—The notes on Railroad Shipping Regulations are based on the Interstate Commerce Commission "Regulations for the Transportation of Explosives and Other Dangerous Articles by Freight and Express" published by the Bureau of Explosives, 30 Vesey Street, New York. (A copy of this pamphlet, which is for public distribution, should be in the hands of everyone dealing in chemicals and allied products.) Certain extracts from this publication defining the terms "Red label," "Yellow label," etc., and giving other information of value to shippers will be found on page 529.

Fire Hazards:—The notes on Fire Hazards are based on the practice of the inspectors of the New York Board of Fire Underwriters. Ordinarily, we have classed as "dangerous" all substances which are obvious^{ly} so when stored or transported in quantity. It is obvious that a great number of circumstances must be considered in deciding whether a substance is hazardous or not. A small amount of an oil in a bottle in a laboratory may not present any fire hazard, whereas a 50,000-gal. tank of the same oil would. Almost any combustible substance may present a marked fire hazard under certain conditions. We have attempted to restrict the term "dangerous" to such substances as warrant more than ordinary precaution.

Further Information:—For sources of supply of the majority of chemicals and chemical materials listed in the Dictionary consult the current edition of the "Chemical Engineering Catalog," where the most prominent firms supplying each product will be found listed.

For makers of equipment for manufacturing or refining any of the

substances dealt with in the Dictionary consult the current edition of the "Chemical Engineering Catalog," where descriptions, accompanied by tables of sizes, capacities, etc., of the leading makes of industrial chemical equipment will be found.

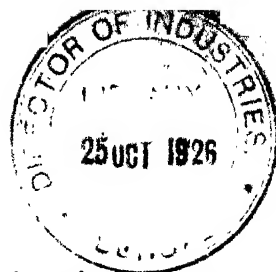
The Information Bureau of The Chemical Catalog Company, Inc., 1 Madison Avenue, New York, will always be pleased to advise as to the sources of supply of any of the items listed in the Dictionary, or as to equipment for manufacturing or refining them.

For Technical Books dealing with any of the items listed in the Dictionary consult the Technical Book Section of the Chemical Engineering Catalog, or communicate with the Book Department, The Chemical Catalog Company, Inc., 1 Madison Avenue, New York, which can procure any technical book in print at the publisher's own net price.

Provision for Memoranda

Appreciating that many owners of this Dictionary may wish to amplify the data under some of the headings by making notes and memoranda of particular interest to themselves, the Publishers have adopted a format unusual in a book of this character which should add greatly to the convenience of many.

A generous space is left between all items, room for a line or so of text; and, to provide for more extended notes, a wide margin is carried at the bottom of each page. It is hoped that this departure from the usual crowded arrangement will prove its value to those who use this book.



The Condensed Chemical Dictionary

A

Abaiser. See Charcoal, Animal.

Abelmoschus (Musk mallow, Musk seed, Amber seed, Ambrette).

Derivation: Seeds of *Abelmoschus*.

Habitat: Egypt, India and Tropical America.

Grades: Technical.

Containers: Bags.

Uses: Manufacture of perfumes; adulterating musk; preserving woollens from moths.

Fire hazard: None.

Railroad shipping regulations: None.

Abietic Acid. See Acid abietic.

Abietinic Acid. See Acid abietic.

Abrasives See Aloxite, Alundum, Borolon, Bur stone, Carborundum, Corundum, Cratolon, Electrolon, Emery, Garnet, Grindstone, Kieselgur, Millstone, Novaculite, Oilstone, Pumice, Scythestone, Tripoli, Volcanic ash, Whetstone.

Abraumalz.

Derivation: A mixture of potassium and magnesium chlorides and sulfates and other salts, overlying the rock-salt deposits at Stassfurt, Germany.

This mineral was most important source of potash salts prior to 1914.

Fire hazard: None.

Railroad shipping regulations: None.

Absinthe Oil. See Wormwood oil.

Absinthin* (Absinthiin, Absynthin)
 $C_{40}H_{56}O_8 \cdot H_2O$.

Color and properties: Yellowish-brown, amorphous powder; very bitter taste.

Constants: Melting-point 120° - 125° C.

Soluble in alcohol and chloroform; insoluble in water.

Derivation: From *Artemisia absinthium*.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Absinthium* (Wormwood).

Derivation: Leaves and tops of *Artemisia absinthium*.

Habitat: Europe, Northern and Western Asia, and Africa; cultivated in U. S.

Grades: Technical.

Containers: Bags; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Absynthin. See Absinthin.

Acacia.

Derivation: Gummy exudation from *Acacia senegal* and other species of *Acacia*.

Habitat: Africa, Arabia and India.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden kegs; tins.

Uses: Medicine; adhesives.

Fire hazard: None.

Railroad shipping regulations: None.

Acaciae Cortex, B. P. *Acacia* bark.

Acaciae Gummi, B. P. (Acacia gum).
See Acacia.

Acanthite. A natural silver sulfide, Ag_2S . It contains 87 per cent silver. Colorado.

Acenaphthene* (Ethylenenaphthene, Ethylenenaphthalene) $\text{C}_{10}\text{H}_8(\text{CH}_2)_2$.
Color and properties: White needles.
Constants: Specific gravity 1.0687; melting-point 95°C .; boiling-point 277°C .
Soluble in hot alcohol.
Derivation: From coal-tar.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuff intermediates.
Fire hazard: None.
Railroad shipping regulations: None.

Acerdol. See Calcium permanganate.

Acetal* (Diethylacetal, Ethylenediethyl ether, Diethylaldehyde)
 $\text{CH}_3\text{CH}(\text{OC}_2\text{H}_5)_2$.
Color and properties: Colorless, volatile liquid; agreeable odor; nutty after-taste.
Constants: Specific gravity 0.831; boiling-point $103^\circ\text{--}104^\circ\text{C}$.
Soluble in water, alcohol and ether.
Derivation: By the imperfect oxidation of ethyl alcohol.
Method of purification: Rectification.
Grades: Technical.
Containers: *Glass bottles; iron drums.
Uses: Medicine; solvent.
Fire hazard: None.
Railroad shipping regulations: None.

Acetaldehyde* (Ethyl aldehyde, Acetic aldehyde, Ethanol, Aldehyde)
 CH_3CHO .
Color and properties: Colorless, light, inflammable liquid; pungent, fruity odor.
Constants: Specific gravity 0.801; boiling-point 21°C .
Soluble in water, alcohol and ether.
Derivation: (1) Commercially obtained (a) from "first runnings" of alcohol stills by fractionation in a special still; (b) by passing alcohol vapor over

platinum black; (c) by synthesis from acetylene gas. (2) By pouring a mixture of 90 per cent. alcohol and concentrated sulfuric acid into a solution of potassium bichromate. The mixture is heated in a reflux apparatus and subsequently distilled.
Method of purification: Rectification in a special type of still.
Grades: Technical.
Containers: Steel cylinders.
Uses: Paraldehyde; organic synthesis; silvering mirrors; dyestuffs.
Fire hazard: Dangerous.
Railroad shipping regulations: Red label.

Acetamide* (Acetic acid amine)
 CH_3CONH_2 .
Color and properties: Colorless crystals; mousy odor.
Constants: Specific gravity 1.139; melting-point 82°C .; boiling-point 223°C .
Soluble in water and alcohol.
Derivation: By the interaction of ethyl acetate and ammonium hydroxide.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden barrels.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acetaminosalol. See Salophen, page 508.

Acetanilide* (Phenylacetamide, Antifebrin) $\text{C}_6\text{H}_5\text{NH}(\text{COCH}_3)$.
Color and properties: White, shining, crystalline scales; slightly burning taste.
Constants: Specific gravity 1.2105; melting-point 113°C .; boiling-point 305°C .
Soluble in water, alcohol, ether and chloroform.
Derivation: By the acetylation of aniline with glacial acetic acid.
Method of purification: Crystallization.
Grades: Technical; U. S. P.; B. P.
Containers: Wooden kegs; glass bottles.
Uses: Medicine; preservative for hy-

drogen peroxide; addition to cellulose ester "dopes" and lacquers.
Fire hazard: None.
Railroad shipping regulations: None.

Acetanilidum, U. S. P., B. P. See Acetanilide.

Acetanisidin. See Methacetin, page 506.*

Acetic Acid. See Acid acetic.

Acetic Acid Amine. See Acetamide.

Acetic Aldehyde. See Acetaldehyde.

Acetic Anhydride. See Acid acetic, Anhydride.

Acetic Ether. See Ethyl acetate.

Acetic Oxide. See Acid acetic, Anhydride.

Acetin* (Monoacetin)

$C_2H_5O_2C_3H_5(OH)_2$.

Color and properties: Colorless, thick liquid.

Constants: Specific gravity 1.2212; boiling-point: Decomposes.

Soluble in water, alcohol and ether.

Derivation: By heating glycerine and strong acetic acid, distilling off the weak acetic acid formed and again heating with strong acetic acid and distilling.

Method of purification: Rectification.

Impurities: Uncondensed acetic acid.

Grades: Technical.

Containers: Iron drums.

Uses: Gelatinizing smokeless powders; preparing non-congealing dynamites; production of dinitroacetyl-glycerin.

Fire hazard: None.

Railroad shipping regulations: None.

Acetocinnamone. See Benzylidene acetone.

Acetone* (Dimethylketone, Dimethyl-

ketal, Ketopropane, Methylacetyl, Pyroacetic ether, Propanone)
 CH_3COCH_3 .

Color and properties: Colorless liquid; fragrant, mint-like odor; inflammable.

Constants: Specific gravity 0.7900; melting-point $-94.3^{\circ}C$; boiling-point $56.48^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: (a) By the dry distillation of brown or gray calcium acetate. (b)

Acetylene, obtained by the action of water on calcium carbide, passes through several synthetic processes, in which mercuric oxide is employed as a catalytic agent, until acetic acid is formed. This is converted into acetone. (c) A special ferment is added to a grain mash, the product of the fermentation being butyl alcohol and acetone as a by-product. The acetone is obtained by distillation.

Method of purification: Rectification.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums; tank cars; carboys; tin cans.

Uses: Explosive manufacture where it is employed as a solvent in making smokeless powder; solvent; varnishes; lacquers; organic synthesis; manufacture of chloroform; manufacture of celluloid; absorbent for acetylene gas.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Acetone Alcohol. See Methyl alcohol.

Acetone Chloroform. See Chloretone, page 504.

Acetone, Monochlorated. See Chloroacetone.

Acetone Oil*

Derivation: An oily residuum obtained as a by-product in the distillation of acetone.

Uses: Solvent; denaturant for alcohol.

Grades: Technical.

Containers: Iron drums.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Acetonitrile. See Methyl cyanide.

Acetoneum, U. S. P., B. P. See Acetone.

Acetphenetidinum, U. S. P. See Acetophenetidine.

Acetophenetidine* (Para-acetphenetidine, Phenacetin, Oxyethylacetanilide)
 $\text{CH}_3\text{CONHC}_6\text{H}_4\text{OC}_2\text{H}_5$.

Color and properties: Colorless crystals.

Constants: Melting-point: 135°C .

Soluble in water, alcohol and ether.

Derivation: By the interaction of phenetidine and glacial acetic acid.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acetophenone* (Hypnone)

$\text{C}_6\text{H}_5\text{COCH}_3$.

Color and properties: Laminated, white crystals; pungent taste.

Constants: Specific gravity: 1.0329; melting-point 20.5°C ; boiling-point 202°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By treating benzol with acetyl chloride in presence of aluminum chloride.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Acetyl Bromide* CH_3COBr .

Color and properties: Colorless, fuming liquid; turns yellow in air; reacts violently with water; fumes irritate the eyes.

Constants: Boiling point 81°C .

Soluble in ether.

Derivation: By the interaction of acetic acid and phosphorus pentabromide.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; metal bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: White label.

Acetyl Chloride* CH_3COCl .

Color and properties: Colorless, highly refracting, fuming liquid.

Constants: Specific gravity 1.1051; melting-point 50.9°C .

Soluble in ether.

Derivation: By mixing glacial acetic acid and phosphorus trichloride in the cold and heating a short time to drive off hydrochloric acid. The acetyl chloride is then distilled.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; carboys.

Uses: Organic preparations.

Fire hazard: None.

Railroad shipping regulations: White label.

Acetyl Iodide* CH_3COI .

Color and properties: Brown, transparent, fuming liquid.

Constants: Specific gravity 1.98; boiling-point $105^\circ\text{--}108^\circ\text{C}$.

Soluble in ether.

Derivation: By the interaction of acetic acid, iodine and phosphorus.

Method of purification: Distillation.

Grades: Technical.

Containers: Glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: White label.

Acetyl Oxide. See Acid acetic, Anhydride.

Acetyl-para-aminosalol. See Salophen, page 508.

Acetyl-para-aminophenyl Salicylate. See Salophen, page 508.

Acetyl-para-phenylenediamine. See Phenylenediamine, Para-.

Acetylphenylenediamine. See Phenylenediamine, Para-.

Acetylsalicylic Acid. See Acid acetylsalicylic.

Acetyltannin. See Diacetyltannin.

Fire hazard: None.

Railroad shipping regulations: None.

Acetylene* C_2H_2 .

Color and properties: Colorless gas; highly inflammable.

Constants: Specific gravity 0.91; melting-point $-81.5^{\circ}C$; boiling-point $-83.6^{\circ}C$.

Soluble in alcohol, acetone and water.

Derivation: By the action of water on calcium carbide.

Grades: Technical.

Containers: Steel cylinders; also sold in cylinders, dissolved in acetone.

Uses: Organic synthesis; illumination; oxy-acetylene welding and cutting of metals.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Acid Abietic* (Acid abietinic.)

$C_{44}H_{64}O_5$.

Color and properties: Yellowish resinous powder.

Constants: Melting-point $182^{\circ}C$.

Soluble in alcohol, ether, chloroform and benzol; insoluble in water.

Derivation: By digesting colophony with weak alcohol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Resinates of heavy metals as varnish dryers.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Acetylene Tetrabromide* (Muthmann's liquid) $CHBr_2 \cdot CHBr_2$.

Color and properties: Yellowish liquid.

Constants: Specific gravity 2.98-3.00; boiling-point 239° - $242^{\circ}C$.

Soluble in alcohol, ether; insoluble in water.

Derivation: By the interaction of acetylene and bromine, and subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Separating minerals by specific gravity; solvent.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Abietinic. See Acid Abietic.

Acid Acetic* (Acid methanecarboxylic, Vinegar acid) $HC_2H_3O_2$.

Color and properties: Clear, colorless liquid. Vinegar is a dilute, impure acetic acid.

Constants: Specific gravity 1.049; melting-point $16.7^{\circ}C$; boiling-point $118.1^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: (a) The pyroligneous acid obtained from the destructive distillation of wood is neutralized with lime. The acetate of lime obtained is dissociated with hydrochloric acid in copper or iron stills and the acetic acid recovered by distillation. It is further purified by re-distillation over potassium bichromate and filtering through freshly burned charcoal.

When pyroligneous acid is distilled without neutralization, the distillate coming over at 100° - $120^{\circ}C$, is known as wood vinegar. It is used for some technical purposes, but is generally purified by converting into a calcium salt and distilling with a mineral acid.

(b) By the oxidation of dilute ethyl alcohol, promoted by bacterial action. The solution is concentrated by fractional distillation until a little water remains. Finally by freezing, the

Acetylene Tetrachloride* (Tetrachloroethane). $CHCl_2 \cdot CHCl_2$.

Color and properties: Colorless liquid.

Constants: Specific gravity 1.582; melting-point $-36^{\circ}C$; boiling-point $147.2^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of acetylene and chlorine, and subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Solvent for greases and waxes.

acetic acid may be crystallized out. Pure acetic acid, in consequence of its freezing, is known as "glacial acetic acid." Acetic anhydride is produced when acetic acid is decomposed so that water is driven off.

(c) By direct synthesis from acetylene gas using mercuric oxide as a catalyst.

Method of purification: Rectification.

Grades: Commercial, specific gravity 1.040 (8° Tw) 30 per cent anhydrous acid; U. S. P.; B. P. Strength of solutions 90 per cent, 80 per cent, 60 per cent, 36 per cent, 30 per cent, 28 per cent; redistilled 56 per cent.

Containers: Glass carboys; barrels.

Uses: Acetates; organic synthesis; perfumes; food-flavoring extracts; textile industry; lead whites; manufacture of cellulose acetate; medicine; pharmacy; solvent.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Acetic Amide. See Acetamide.

Acid Acetic Amine. See Acetamide.

Acid Acetic, Anhydride (Acetic anhydride, Acetyl oxide, Acetic oxide) $(\text{CH}_3\text{CO})_2\text{O}$.

Color and properties: Colorless, very mobile, strongly refractory liquid; very strong acetic odor.

Constants: Specific gravity 1.082; boiling-point 139.5°C.

Soluble in alcohol and ether; decomposes in water forming acetic acid.

Derivation: By distilling acetyl chloride with an alkali acetate.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; carboys.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Acetic, Glacial* (Crystallizable acetic acid, Methanecarboxylic acid) CH_3COOH .

Color and properties: Clear, colorless, strongly acid liquid; crystallizes a few degrees below 15°C.

Constants: Specific gravity 1.0553; boiling-point 117°-118°C.

Soluble in water, alcohol and ether.

Derivation: See acetic acid.

Method of purification: Redistillation.

Grades: Technical; U. S. P.; B. P.

Strength of solutions 99½ per cent, 90 per cent, 80 per cent.

Containers: Glass bottles; carboys.

Uses: Organic synthesis; manufacture of colors, drugs, etc.; also for manufacture of cellulose acetate used as air plane "dope" and for other purposes; medicine; solvent.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Acetylsalicylic* (Aspirin)

$\text{C}_2\text{H}_3\text{O}_2\text{C}_6\text{H}_5\text{CO}_2\text{H}$.

Color and properties: White, crystalline powder.

Constants: Melting-point 132°-135°C. Soluble in alcohol and ether; slightly soluble in water.

Derivation: By the acetylation of salicylic acid.

Method of purification: Crystallization.

Impurities: Salicylic acid.

Grades: Technical; B. P.

Containers: Wooden kegs; tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Adipic* (Acid adipinic)

$(\text{CH}_2)_4(\text{COOH})_2$.

Color and properties: Yellowish crystalline powder.

Constants: Melting-point 153°C.; boiling-point 265°C.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: Obtained from animal and plant fats by oxidation with nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Adipinic. See Acid adipic.

Acid Alpha-Hydroxypropionic. See Acid lactic

Acid Alpha-Monobromopropionic. See Acid monobromopropionic.

Acid Alpha-Naphtholsulfonic* (Neville and Winther's acid)
 $C_{10}H_6(OH)(SO_3H)$ 1:4.
 Color and properties: White crystals.
 Constants: Melting-point $170^{\circ}C$.
 Soluble in water, alcohol and ether.
 Derivation: By heating sodium naphthionate with an aqueous solution of caustic soda in an autoclave.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Wooden barrels.
 Uses: Dyestuffs.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Alpha-Naphtholsulfonic* (Cleves' acid) $C_{10}H_6(OH)(SO_3H)$ 1:5.
 Color and properties: Deliquescent crystalline solid.
 Soluble in water, alcohol and ether.
 Derivation: By fusing naphthalene disulfonic acid (1:5) with caustic soda at $160^{\circ}C$.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Wooden barrels.
 Uses: Dyestuffs.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Alpha-Naphthylaminesulfonic*
 (Acid naphthionic)
 $C_{10}H_6(NH_2)SO_3H$ 1:4.
 Color and properties: White crystals or powder.
 Soluble in alcohol and ether.
 Derivation: By baking a mixture of equal molecules of alpha-naphthylamine and sulfuric acid, with which about 3 per cent of oxalic acid is incorporated.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Wooden barrels.

Uses: Dyestuffs.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Alpha-Toluic. See Acid phenylacetic.

Acid Aminoacetic* (Glycocol, Glycine, Aminoethanoic acid)
 $COOH CH_2 NH_2$.
 Color and properties: White crystals.
 Constants: Specific gravity 1.1607; melting-point $232^{\circ}-236^{\circ}C$.
 Soluble in water; insoluble in alcohol and in ether.
 Derivation: By the action of concentrated ammonium hydroxide on monochloroacetic acid, or by the action of alkali on gelatine.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Wooden barrels; kegs.
 Uses: Organic synthesis; medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Aminobenzenesulfonic. See Acids sulfanilic, Meta- and Para-.

Acid Aminobenzoic, Meta-* (Benzaminic acid) $C_6H_4NH_2CO_2H$.
 Color and properties: Yellowish crystals; sublime easily; sweet taste.
 Constants: Specific gravity 1.5104; melting-point $173^{\circ}-174^{\circ}C$.
 Soluble in water, alcohol and ether.
 Derivation: By the reduction of metanitrobenzoic acid.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Wooden kegs.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Aminodracylic. See Acid aminobenzoic, Para-.

Acid Aminoethanoic. See Acid aminoacetic.

Acid Aminonaphtholdisulfonic* (H

acid $C_{10}H_4(OH)(NH_2)(SO_3H)_2$.
 1:8:3:6.
Color and properties: Grey powder.
Soluble in water, alcohol and ether.
Derivation: From alpha-naphthylamine disulfonic acid S by soda fusion.
Method of purification: Crystallization.
Impurities: Chromotropic acid.
Grades: Technical; 80 per cent, 85 per cent.
Containers: Wooden barrels.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Aminonaphtholsulfonic* (G acid, Gamma acid)
 $C_{10}H_5(OH)(NH_2)(SO_3H)$ 2:8:6.
Color and properties: White crystals.
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By heating caustic soda and beta-naphtholdisulfonic acid G. and water in an autoclave.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden barrels; kegs.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Aminophenylarsinic, Para- See Acid arsanilic.

Acid Aminosalicilic Hydrochloride*
 $C_6H_5COOH(OH)NH_2.HCl$.
Color and properties: Grayish-white crystals.
Soluble in water, alcohol and ether.
Derivation: By the reduction of nitrosalicilic acid with zinc and hydrochloric acid.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles; tins.
Uses: Medicine; manufacture of transfer paper.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Aminosuccinic. See Acid asparaginic.

Acid Amygdalic* (Acid phenylhydroxyacetic, Acid amygdalinic, Acid phenylglycolic, Acid benzoglycolic, Acid para-mandelic)
 $C_6H_5CH(OH)COOH$.
Color and properties: Large, transparent crystals.
Constants: Melting-point $118^\circ C$.
Soluble in ether; slightly soluble in water; insoluble in alcohol.
Derivation: From benzaldehyde and acetophenone dibromide.
Method of purification: Crystallization.
Grades: Technical.
Containers: Tins.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Amygdalinic. See Acid amygdalic.

Acid Angelic* (Acid angelic)
 $CH_2CHCH(CH_3)COOH$.
Color and properties: Colorless needles or prisms; spicy odor.
Constants: Specific gravity 0.9539; melting-point $45^\circ C$; boiling-point $185^\circ C$.
Soluble in alcohol, ether and hot water.
Derivation: From the root of angelica archangelica or from the oil of anthemis nobilis by distillation.
Method of purification: Crystallization.
Grades: Technical.
Containers: Tins.
Uses: Medicine; extracts.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Angelic. See Acid angelic.

Acid Anthranilic* (Acid ortho-aminobenzoic) $C_6H_4(NH_2)(CO_2H)$.
Color and properties: Yellowish crystals.
Constants: Melting-point $144^\circ C$.
Soluble in water, alcohol and ether.
Derivation: By the treatment of phthalimide with an alkaline hypobromite solution.
Method of purification: Crystallization.

- Grades:** Technical.
Containers: Wooden barrels; kegs.
Uses: Manufacture of dyes, drugs and perfumes.
Fire hazard: None.
Railroad shipping regulations: None.
- Acid, Apple.** See Acid malic.
- Acid Arachic.** See page 503.
- Acid Arachidic.** See Acid arachic, page 503.
- Acid Arsanilic*** (Acid atoxylic; Acid para-aminophenylarsinic; Arsenic acid anilide) $C_6H_4NH_2.AsO(OH)_2$.
Color and properties: White, crystalline powder; poisonous.
Constants: Melting-point $232^{\circ}C$.
Soluble in ether, amyl alcohol and alkaline carbonate solutions; slightly soluble in alcohol and acetic acid; insoluble in acetone, benzol and chloroform.
Derivation: By condensing aniline with arsenic acid, removing the excess of aniline by steam distillation in alkaline solution and setting the acid free by hydrochloric acid.
Method of purification: Conversion into the sodium salt, boiling with animal charcoal, crystallizing the sodium salt and setting the acid free by dilute hydrochloric acid.
Grades: Technical; pure.
Containers: Tins; glass bottles.
Uses: Arsanilates; starting-point for the manufacture of arsenical, medicinal compounds, such as salvarsan, arsphenamine, etc.
Fire hazard: None.
Railroad shipping regulations: None.
- Acid Asparagic.** See Acid asparaginic.
- Acid Asparaginic*** (Acid asparagic, Acid aspartic, Acid aminosuccinic) $COOHCH_2CH(NH_2)COOH$.
Color and properties: Colorless crystals; odorless.
Soluble in water, alcohol and ether.
Derivation: From asparagin by saponification with hydrochloric acid.
Method of purification: Crystallization.
- Grades:** Technical.
Containers: Tins.
Uses: Medicine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.
- Acid Aspartic.** See Acid asparaginic.
- Acid Atoxylic.** See Acid arsanilic.
- Acid Azotic.** See Acid nitric.
- Acid Badische.** See Acid beta-naphthylamine-alpha-sulfonic 2:8.
- Acid Baeyer.** See Acid beta-naphthylaminemonosulfonic 2:7.
- Acid Barbituric***
 $CO(NHCO)_2CH_2.2H_2O$.
Color and properties: White crystals.
Soluble in water, alcohol and ether.
Derivation: By condensing malonic acid ester with urea.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles; tins.
Uses: Preparation of pharmaceutical chemicals.
Fire hazard: None.
Railroad shipping regulations: None.
- Acid, Battery.** Sulfuric acid and potassium bichromate.
- Acid Bayer.** See Acid beta-naphthylaminemonosulfonic 2:7.
- Acid Benзаминic.** See Acid aminobenzoic, Meta-.
- Acid Benзамinoacetic:** See Acid hippuric.
- Acid Benзамemonosulfonic*.**
 $C_6H_5SO_3H$.
Color and properties: Fine, deliquescent needles or large plates.
Constants: Melting-point $65^{\circ}-66^{\circ}C$; boiling-point $137^{\circ}C$.
Soluble in water, alcohol and ether.
Derivation: By sulfonating benzol with fuming sulfuric acid.

Method of purification: Crystallization.
Grades: Technical.
Containers: Iron drums.
Uses: Making phenol; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Benzenesulfonic. See Acid benzenemonosulfonic.

Acid Benzedinedicarboxylic. See Acid diaminodiphenic.

Acid Benzoglycolic. See Acid amydic.

Acid Benzoic* (Acid phenylformic)
 $C_6H_5CO_2H$.
Color and properties: Colorless needles.

Constants: Specific gravity 1.2659; melting-point $121.25^\circ C$; boiling-point $249.2^\circ C$.

Soluble in alcohol and in ether; slightly soluble in water.

Derivation: (a) From gum benzoin by sublimation, or by treatment with milk of lime and then distillation with sulfuric acid. The product is subsequently recovered by sublimation. (b) By treatment of benzol chloride with a hot solution of bleaching powder. (c) By the direct oxidation of toluene by manganese persulfate or precipitated manganese dioxide, and sulfuric acid. The benzoic acid is distilled by steam and allowed to crystallize.

Method of purification: Sublimation.
Grades: Technical; U. S. P.; from gum benzoin; from toluol (ex. tol.); B. P.
Containers: Wooden barrels; glass bottles.

Uses: Dentrifices; seasoning tobacco; aniline dyestuffs; drugs; perfumes; textiles; preservatives; medicine; benzoates.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Benzolaminoacetic. See Acid hippuric

Acid Benzolsulfonic. See Acid benzenemonosulfonic.

Acid Beta-Naphtholdisulfonic (R Acid)
 $C_{10}H_5(OH)(SO_3H)_2$ 2:3:6.

Color and properties: Deliquescent, colorless, silky needles.

Soluble in water, alcohol and ether.
Derivation: By heating beta-naphthol with sulfuric acid, dissolving the melt in water and adding salt.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Manufacturing dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Beta-Naphtholsulfonic* (Acid, Schaeffer's) $C_{10}H_6(OH)SO_3H$ 2:6.

Color and properties: Colorless crystals.

Constants: Melting-point $122^\circ C$.

Soluble in water, alcohol and ether.

Derivation: By heating beta-naphthol with concentrated sulfuric acid. The melt is dissolved in water and on adding salt, the sodium salt of the acid crystallizes out, while the isomeric acids simultaneously formed remain in solution.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Beta-Naphtholsulfonic* (Acid, Cassella) $C_{10}H_6(OH)(SO_3H)_2$ 7.

Color and properties: White crystals.

Constants: Melting-point $89^\circ C$.

Soluble in water and alcohol.

Derivation: By fusion of naphthalene disulfonic acid (2:7) with caustic soda or by heating the acid with an aqueous solution of caustic soda in an autoclave.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Beta-Naphthylamine-alpha-sulfonic* (Acid, Badische) $C_{10}H_6(NH_2)SO_3H$ 2:8.

Color and properties: White crystals. Soluble in alcohol and ether; very slightly soluble in water.

Process of manufacture: By heating together beta-naphthylamine, fuming sulfuric acid (20 per cent SO_3) and the gamma acid (about 70 per cent gamma and 30 per cent alpha.)

Derivation: Crystallization.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Beta-Naphthylamine-beta-sulfonic* (Acid, Broenner's) $C_{10}H_6(NH_2)SO_3H$ 2:6.

Color and properties: Colorless needles.

Derivation: By heating beta-naphthol-beta-sulfonic acid S with aqueous ammonia in an autoclave.

Grades: Technical.

Containers: Barrels and kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Beta-Naphthylamine-delta-sulfonic. See Acid beta-naphthylaminemonosulfonic.**Acid Beta-Naphthylaminemonosulfonic*** (Acid, Cassella's F, Acid, Baeyer's, Acid monosulfonic F, Acid Mono F, Acid beta-naphthylamine-delta-sulfonic). $C_{10}H_6(NH_2)SO_3H$ 2:7.

Color and properties: Colorless crystals.

Soluble in water, alcohol and ether.

Derivation: Acid, Cassella's F). By heating beta-naphtholsulfonic acid F with aqueous ammonia in an autoclave. (Acid, Baeyer,) by heating the beta acid together with beta-naphthylamine sulfate with concentrated sulfuric acid.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Beta-Phenylacrylic. See Acid Cinnamic.**Acid Beta-Pyridinecarboxylic.** See Acid nicotinic.**Acid Bichloroacetic.** See Acid dichloroacetic.**Acid Boracic.** See Acid boric.**Acid Boric*** (Acid boracic, Acid orthoboric) H_3BO_3 .

Color and properties: White crystals.

Constants: Specific gravity 1.4347; melting-point $184^\circ C$.

Soluble in water and in alcohol.

Derivation: By adding hydrochloric or sulfuric acid to a solution of borax and crystallizing.

Method of purification: Recrystallization.

Grades: Crystals; powder; technical; U. S. P.; B. P.

Containers: Barrels; kegs; boxes; burlap bags.

Uses: Medicine; pottery; glass manufacture; metallurgy; flux; preservatives; eye lotions.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Boronotungstic. See Acid borotungstic.**Acid Borophenylic*** (Acid phenylboric) $(C_6H_5BO_2) + (C_6H_5B_3O_8)$.

Color and properties: White or reddish crystals. A mixture of phenyl borate and phenyltriborate.

Constants: Melting-point $204^\circ C$.

Soluble in water and alcohol.

Derivation: By the action of phosphorus oxychloride on a mixture of boric acid and phenol.

Method of purification: Crystallization.

Grades: Technical.

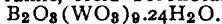
Containers: Tins; glass bottles.

Uses: Medicine; antiseptic.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Borotungstic* (Acid borowolframic, Acid boronotungstic)



Color and properties: Yellowish liquid.

Constants: Specific gravity 3.0.

Soluble in water.

Derivation: By heating ammonium borotungstate with aqua regia.

Grades: Technical.

Containers: Glass bottles.

Uses: Mineralogy.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Borowolframic. See Acid borotungstic.

Acid, Broenner's. See Acid beta-naphthylamine-beta-sulfonic 2:6.

Acid Bromic* HBrO_3 .

Color and properties: Colorless or slightly yellow liquid; turns yellow on exposure.

Constants: Specific gravity 3.1883;

melting-point: Decomposes at 100°C .

Soluble in water.

Derivation: Sulfuric acid is added to a solution of barium bromate and the product recovered by subsequent distillation and absorption in water.

Grades: Technical (Sp. Gr. $1.12=15.5^\circ\text{Be.}$)

Containers: Glass bottles; carboys.

Uses: Medicine; organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Bromoacetic. See Acid monobromoacetic.

Acid Bromosuccinic. See Acid monobromosuccinic

Acid, Bronner's. See Acid beta-naphthylamine-beta-sulfonic 2:6.

Acid Butylacetic* (Acid isohexoic, Acid isocaproic)
 $(\text{CH}_3)_2\text{CH}(\text{CH}_2)_2\text{COOH}.$

Color and properties: Yellow liquid; rancid odor.

Constants: Specific gravity 0.925; boiling-point 199°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: From isoamylcyanide by saponification.

Method of purification: Rectification.

Grades: Technical.

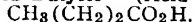
Containers: Glass bottles; carboys.

Uses: Extracts; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Butyric* (Acid propylformic)



Color and properties: Colorless, limped liquid; rancid odor.

Constants: Specific gravity 0.9599;

melting-point -3.12°C ; boiling-point 162.3°C .

Soluble in water, alcohol and ether.

Derivation: (a) By butyric fermentation of starch paste in the presence of a little tartaric acid; putrified meat or cheese being added after a few days. (b) Pure cultures of special bacteria are also used. (c) From molasses residues by the Effront process.

Grades: Technical.

Containers: Carboys.

Strength of solution: Technical—60 per cent.

Uses: Varnishes; medicine; butyrates.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Cacodylic (Acid dimethylarsenic, Acid kakodylic) $(\text{CH}_3)_2\text{AsOOH}.$

Color and properties: Colorless, odorless crystals; poisonous.

Constants: Melting-point 200°C .

Soluble in water and alcohol.

Derivation: By distilling a mixture of arsenic trioxide and potassium acetate.

Grades: Technical.

Containers: Iron drums.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Calcium Phosphate. See Calcium phosphate, Monobasic.

Acid Camphoric* $C_8H_{14}(CO_2H)_2$.

Color and properties: Colorless, odorless needles or scales.

Constants: Specific gravity 1.228; melting-point $208^{\circ}C$.

Soluble in alcohol and ether.

Derivation: By oxidizing camphor with nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Medicine; celluloid.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Caprylic. See Acid caprylic.

Acid Caproic* (Acid capronic, Acid hexylic, Acid hexoic, Acid pentylformic) $C_6H_{11}COOH$.

Color and properties: Oily, colorless liquid; odor of Limburger cheese.

Constants: Specific gravity 0.922; melting-point $-5.2^{\circ}C$; boiling-point $205^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: From crude fermentation butyric acid by fractional distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Capronic. See Acid caproic.

Acid Caprylic* (Acid octylic, Acid octic, Acid caprylic) $C_7H_{14}COOH$.

Color and properties: Colorless liquid; crystallizing below $17^{\circ}C$.

Constants: Specific gravity 0.9185; melting-point $17^{\circ}C$; boiling-point 235° - $237^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By saponification and subsequent distillation of coconut oil.

Method of purification: Crystallization or rectification.

Grades: Technical.

Containers: Cans; glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Carbolic. See Phenol.

Acid Carbonic. See Carbon dioxide.

Acid Carminic* $C_{22}H_{22}O_{18}$.

Color and properties: Dark, purplish-brown mass or bright-red powder.

Constants: Melting-point: Decomposes at $136^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By extraction from *Coccus cacti* (Cochineal.)

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Stain in microscopy; indicator in analytical chemistry; coloring proprietary medicines.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Caryophyllic. See Eugenol.

Acid, Cassella. See Acid beta-naphthol-sulfonic 2:7.

Acid, Cassella F. See Acid beta-naphthylaminemonosulfonic.

Acid Cetylacetic. See Acid stearic.

Acid Cetylic. See Acid palmitic.

Acid Chinic. See Acid quinic.

Acid Chlorazotic. See Aqua regia.

Acid Chloroazotic. See Aqua regia.

Acid Chlorohydric. See Acid hydrochloric.

Acid Chlorophthalic*

$C_8H_5Cl(COOH)_2$.

Color and properties: Colorless crystals.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the chlorination of phthalic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Chloroplatinic* (Platinic chloride)

$\text{H}_2\text{PtCl}_6 \cdot \text{H}_2\text{O}$.

Color and properties: Red-brown crystals.

Constants: Specific gravity 2.431; melting-point: Decomposes.

Soluble in water, alcohol and ether.

Derivation: By solution of platinum in aqua regia, evaporation and crystallization.

Grades: Technical; pure, reagent. Usually sold under the name platinum chloride or platinic chloride.

Containers: Glass bottles.

Uses: Electroplating; platinizing pumice and the like for catalysts; etching zinc for printing; platinum mirrors; indelible ink; ceramics; microscopy; chemical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Chlorosulfonic* SO_2ClOH .

Color and properties: Brown, oily, corrosive liquid.

Constants: Specific gravity 1.784; boiling-point 82°C .

Soluble in water and alcohol.

Derivation: By passing chlorine through cooled sulfuric acid or by slowly dropping phosphorus trichloride into sulfuric acid.

Grades: Technical.

Containers: Carboys and iron drums.

Uses: Organic preparations, especially saccharine; military poison gas.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Choliaic. See Acid taurocholic.

Acid Choleic. See Acid taurocholic.

Acid Choleinic. See Acid taurocholic.

Acid Cholic. See Acid glycocholic.

Acid Chromic* (Chromium trioxide)
 CrO_3 .

Color and properties: Reddish-brown crystals.

Constants: Specific gravity 2.67-2.82; melting-point 196°C .

Soluble in water.

Derivation: Hydrochloric or sulfuric acid is added to a solution of sodium bichromate and the product recovered by crystallization; also electrolytically.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums.

Uses: Medicine; electric cells; chromates; organic synthesis; dyestuffs.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Acid Chrysophanic. See Chrysarobin.

Acid Cinnamic* (Acid beta-phenylacrylic, Acid cinnamylic)

$\text{C}_6\text{H}_5\text{CHCHCOOH}$.

Color and properties: White, crystalline scales.

Constants: Specific gravity 1.2475; melting-point 133°C ; boiling-point 300°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By heating benzaldehyde with sodium acetate in presence of a dehydrating agent (acetic anhydride) or by heating benzal chloride with sodium acetate in an autoclave.

Grades: Technical.

Containers: Tin cans; glass bottles.

Uses: Medicine; perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Cinnamylic. See Acid cinnamic.

Acid Citric* (Acid oxytricarballic)

$(\text{CO}_2\text{HCH}_2)_2\text{C}(\text{OH})\text{CO}_2\text{H}$.

Color and properties: Colorless, odorless crystals.

Constants: Specific gravity 1.542; melting-point 153°C .

Soluble in water, alcohol and ether.

Derivation: The crude citric acid obtained from lemons or other citrus fruit is neutralized with calcium carbonate and the lime salt dissociated with sulfuric acid. It is then filtered, evaporated and recovered by crystallization.

Method of purification: Recrystallization.

Impurities: Tartaric acid.

Grades: Crystals; powder; second hands; technical; U. S. P.; B. P.

Containers: Wooden barrels; kegs.

Uses: Medicine; flavoring extracts; confectionery; soft drinks; effervescing salts.

Fire hazard: None.

Railroad shipping regulations: None.

Acid, Cleve's. See Acid alpha-naphthol-sulfonic 1:5.

Acid Cresotic* (Acid cresotinic, Acid kresotic) $C_6H_3COOH.OHCH_3$.

Color and properties: White or reddish-white powder; mixture of ortho-, meta- and para-acids.

Constants: Melting-point $151^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: From creosote oil.

Method of purification: Rectification.

Grades: Technical.

Containers: Wooden kegs.

Uses: Disinfectant.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Cresotinic: See Acid cresotic.

Acid Cresylic. See Cresol.

Acid Crotonic* $CH_3CHCHCO_2H$.

Color and properties: Colorless crystals.

Constants: Specific gravity 0.9730; melting-point $72^{\circ}C$; boiling-point $185^{\circ}C$.

Soluble in water and ligroin.

Derivation: By heating malonic acid with paraldehyde and glacial acetic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Crotonolic. See Acid tiglic.

*** Acid Cyanoacetic*** $CH_2CNCOOH$.

Color and properties: White crystals.

Constants: Melting-point $66.1^{\circ}-66.4^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By the interaction of sodium chloroacetate and potassium cyanide solution.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Cyanuric* (Tricarbimide, Acid isocyanuric, Acid tricyanic)

$CO(NHCO)_2NH_2.H_2O$.

Color and properties: White crystals.

Constants: Specific gravity 1.768.

Soluble in water, alcohol and hot mineral acids.

Derivation: By heating urea or by the action of water on cyanuric chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Dextrotartaric. See Acid tartaric.

Acid Diaminodiphenic. (Acid benzoinedicarboxylic)

$C_6H_3(CO_2H)NH_2.C_6H_3(CO_2H)NH_2$

Color and properties: White crystals. Soluble in alcohol and ether; insoluble in water.

Derivation: By boiling meta-nitrobenzaldehyde with caustic soda, reducing with zinc dust and acidifying.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Diaminonaphthalenedisulfonic*

$C_{10}H_4(NH_2)_2(SO_3H)_2$ 1:5:3:7.

Color and properties: Small crystals. Soluble in alcohol and ether; insoluble in water.

Derivation: By nitration and reduction of naphthalenedisulfonic acid (2:6.)

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Diaminonaphthalenedisulfonic*

$C_{10}H_4(NH_2)_2(SO_3H)_2$ 1:8:3:6.

Color and properties: Long, thin crystals.

Soluble in water and alcohol.

Derivation: By the nitration and reduction of naphthalenedisulfonic acid (2:7).

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Making H acid.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Diaminonaphthalenesulfonic*

$C_{10}H_5(NH_2)_2SO_3H$ 1:4:2.

Color and properties: Small crystals. Soluble in alcohol and ether; sparingly soluble in water.

Derivation: From alpha-naphthylaminesulfonic acid by combination with diazobenzene and subsequent reduction.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Diaminonaphthalenesulfonic*

$(C_{10}H_5(NH_2)_2SO_3H)$ 1:3:6.

Color and properties: Small crystals. Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By heating the alpha-naphtholdisulfonic acid with ammonium hydroxide under pressure.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Diaminostilbenedisulfonic*

$C_8H_3(NH_2)(SO_3H)CHCHC_6H_3-(SO_3H)(NH_2)$ 1:2:4.

Color and properties: Yellowish microscopic needles.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the reduction of dinitrostilbenedisulfonic acid with ferrous hydrate and ammonia.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Diazobenzenesulfonic, Para-*

$C_6H_4NSO_3N$.

Color and properties: White paste.

Caution: May explode if heated.

Soluble in water and ether; insoluble in alcohol.

Derivation: By the action of nitrous acid on para-sulfanilic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Dichloroacetic* (Acid bichloroacetic) $CHCl_2COOH$.

Color and properties: Colorless liquid.

Constants: Specific gravity 1.5724;

melting-point $-4^{\circ}\text{C}.$; boiling-point $180^{\circ}\text{--}191^{\circ}\text{C}.$

Soluble in water, alcohol and ether.

Derivation: By the interaction of hydrated chloral and potassium cyanide and subsequent distillation.

Method of purification: Distillation.

Grades: Technical.

Containers: Glass bottles; carboys.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Dichlorophthalic*

$\text{C}_6\text{H}_2\text{Cl}_2(\text{CO}_2)_2$.

Color and properties: Colorless, thick crystals.

Soluble in hot water.

Derivation: By oxidizing dichloronaphthalene tetrachloride with nitric acid.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Diethylbarbituric. See Veronal.

Acid Digallic. See Acid tannic.

Acid Dihydroxystearic* (Acid Dioxy-stearic) $\text{C}_{17}\text{H}_{33}(\text{OH})_2\text{COOH}$.

Color and properties: White crystals.

Constants: Melting-point $135^{\circ}\text{C}.$

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating dibromide of isooleic acid with silver oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Stearic acid compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Dimethylarsenic. See Acid cacodylic.

Acid Dinitrodiethylsulfonic

$(\text{CH}_2\text{C}_6\text{H}_3(\text{SO}_3\text{H})\text{NO}_2)_2$.

Color and properties: Colorless plates or tablets.

Soluble in water, alcohol and ether.

Derivation: By the oxidation of sodium para-nitrotoluene sulfonate with sodium hypochlorite in an excess of caustic soda.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Dinitrostilbenedisulfonic

$(\text{HC}_6\text{H}_4(\text{SO}_3\text{H})\text{NO}_2)_2$.

Color and properties: Colorless or slightly yellow needles.

Soluble in water.

Derivation: By oxidation of para-nitrotoluene sulfonate with sodium hypochlorite, in presence of limited amount of caustic soda.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Dioxystearinic. See Acid dioxystearic.

Acid Dioxysuccinic. See Acid tartaric.

Acid, Dipping. See Acid sulfuric.

Acid, Electrolyte. See Acid sulfuric.

Acid Ethanethiolic. See Acid thioacetic.

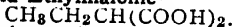
Acid Ethylcarbonic. See Acid propionic.

Acid Ethylenedicarboxylic. See Acid succinic.

Acid Ethylenesuccinic. See Acid succinic.

Acid Ethylenelactic. See Acid lactic.

Acid Ethylmalonic*



Color and properties: Colorless crystals.

Constants: Melting-point 111.5°C .

Soluble in water, alcohol and ether.

Derivation: From alpha-bromobutyric acid heated with potassium mercuric cyanide and decomposed with potassium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Ethylsulfuric* (Acid sulfethylic, Acid sulfovinic, Monoethyl sulfate)
 $\text{C}_2\text{H}_5\text{HSO}_4$

Color and properties: Colorless, oily liquid.

Constants: Specific gravity 1.316; boiling-point 280°C .

Soluble in water, alcohol and ether.

Derivation: By the action of sulfuric acid on ethyl alcohol.

Method of purification: Distillation.

Grades: Technical.

Containers: Glass bottles; carboys.

Uses: Medicine; precipitant for casein; organic preparations.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Ethylsulfurous* (Acid sulfovinous) $\text{C}_2\text{H}_5\text{HSO}_3$

Color and properties: Crystalline, unstable mass.

Soluble in alcohol, ether and alkalis.

Derivation: By the action of thionyl chloride on ethyl alcohol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Eugenic. See Eugenol.

Acid F, Cassella's. See Acid beta-naphthylamine monosulfonic 2:7.

Acids, Fatty. See Acids oleic, palmitic, stearic.

Acid Fluorhydric. See Acid hydrofluoric.

Acid Formic* (Acid hydrogen carboxylic) HCOOH

Color and properties: Colorless liquid; pungent odor; dangerously caustic.

Constants: Specific gravity 1.2178; melting-point 8.3°C ; boiling-point 100.8°C .

Soluble in water, alcohol and ether.

Derivation: By treatment of sodium formate and sodium acid formate with sulfuric acid at low temperatures, and distilling in vacuo.

Method of purification: Rectification.

Grades: Technical; 75 per cent; 90 per cent.

Containers: Barrels; carboys.

Uses: Organic synthesis; as a substitute for lactic acid in dyeing and finishing of textiles; electroplating; medicine; use also suggested in tanning and in wine manufacture to aid fermentation; making formates.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid G. See Acid aminonaphtholsulfonic 2:8:6.

Acid G. R. Acid naphtholdisulfonic, Alpha.

Acid Gallic* (Acid trioxybenzoic, Acid trihydroxybenzoic)



Color and properties: Colorless or slightly yellow, crystalline needles or prisms.

Constants: Specific gravity 1.694; melting-point $222^\circ\text{--}240^\circ\text{C}$.

Soluble in alcohol; sparingly soluble in water and ether.

Derivation: By the action of mould on solutions of tannin or by boiling the

latter with dilute acid or caustic soda.
 Grades: Technical; U. S. P.; B. P.
 Containers: Wooden barrels; kegs.
 Uses: Photography; writing ink; dyeing; medicine; manufacture of pyrogallol.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Gallotannic. See Acid tannic.

Acid Gamma. See Acid aminonaphthol-sulfonic 2:8:6.

Acid Glutaric (Acid pyrotartaric, Normal) $\text{COOH}(\text{CH}_2)_3\text{COOH}$
 Color and properties: Colorless crystals.
 Constants: Melting-point 97°C .; boiling-point $302^\circ\text{--}304^\circ\text{C}$.
 Soluble in water and in alcohol.
 Derivation: From oxyglutaric acid by heating with hydriodic acid.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Glass bottles; kegs.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Glycerinocarboic*

$\text{C}_8\text{H}_5(\text{OH})_2\text{C}_6\text{H}_5\text{O}$.
 Color and properties: Colorless liquid.
 Soluble in water and alcohol.
 Derivation: By heating glycerine and phenol.
 Method of purification: Distillation.
 Grades: Technical.
 Containers: Glass bottles; carboys.
 Uses: Antiseptic; disinfectant.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Glycerinophosphoric. See Acid glycerophosphoric.

Acid Glycerophosphoric* (Acid glycerinophosphoric) $\text{C}_8\text{H}_5(\text{OH})_2\text{H}_2\text{PO}_4$.
 Color and properties: Colorless or pale yellow liquid.
 Constants: Specific gravity 1.125.
 Soluble in water and alcohol.

Derivation: By the interaction of glycerine and phosphoric acid.
 Method of purification: Distillation.
 Grades: Technical.
 Containers: Glass bottles; carboys.
 Uses: Medicine; manufacture of glycerophosphates.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Glycocholic* (Acid cholic)

$\text{C}_{26}\text{H}_{43}\text{NO}_6$.
 Color and properties: White, amorphous powder; solution has bitter-sweet taste.
 Constants: Melting-point 133°C .; boiling-point 140°C .
 Soluble in water and alcohol.
 Derivation: Obtained from ox gall.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Antiseptic.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Glycolic* (Acid glycollic, Acid oxyacetic, Acid hydroxyacetic)
 CH_2OHCOOH .

Color and properties: Colorless crystals.
 Constants: Melting-point $78^\circ\text{--}79^\circ\text{C}$.
 Soluble in water, alcohol and ether.
 Derivation: From monochloroacetic acid by boiling with water.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Kegs.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Acid Glycollic. See Acid glycolic.

Acid H. See Acid aminonaphtholdisulfonic 1:3:6:8.

Acid Heptoic. See Acid α nanthic.

Acid Heptylic. See Acid α nanthic.

Acid Hexoic. See Acid caproic.

Acid Hexylic. See Acid caproic.

Acid Hippuric* (Acid benzolaminoacetic, Acid benzaminoacetic, Benzoylglycin, Benzoylglycocol)
 $\text{CH}_2\text{NH COC}_6\text{H}_5\text{COOH}$.

Color and properties: White crystals.
Constants: Specific gravity 1.3711; melting-point 190.2°C .; boiling-point: Decomposes.

Soluble in alcohol and in hot water; slightly soluble in ether.

Derivation: By heating benzoic anhydride and glycocol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Hydriodic* (Hydrogen iodide) HI .
Color and properties: Clear colorless liquid.

Constants: Specific gravity 4.3737; melting-point -51.3°C .; boiling-point -35.6°C .

Soluble in water.

Derivation: By passing hydrogen with iodine vapor over warm platinum sponge which acts as a catalyzer, and absorption in water.

Grades: Technical, strength 49°Be . (Sp. gr. 1.5); U. S. P.; B. P.

Containers: Carboys; glass bottles.

Uses: Medicinal; preparation of iodine salts; organic preparations.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Hydrobromic* (Hydrogen bromide) HBr in aqueous solution.

Color and properties: Clear, colorless or faintly yellow liquid.

Constants: Specific gravity (HBr gas) 2.71; melting-point -86.13°C .; boiling-point -68.7°C .

Soluble in water.

Derivation: By passing hydrogen with bromine vapor over warm platinum

sponge which acts as a catalyzer and absorption in water.

Impurities: Sulfuric acid, heavy metals, hydrochloric acid, hydriodic acid.

Grades: Technical, strength 40 per cent HBr ; U. S. P.; B. P.

Containers: Carboys; glass bottles.

Uses: Medicine; analytical chemistry; organic preparations.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Hydrochloric* (Acid muriatic, Acid chlorohydric, Hydrogen chloride) HCl in aqueous solution.

Color and properties: Clear, colorless or slightly yellow, fuming, pungent liquid; poisonous.

Constants: Specific gravity (HCl gas) 1.269; melting-point (anhydrous hydrogen chloride) -112°C .; boiling-point (anhydrous hydrogen chloride) -83.1°C .

Soluble in water.

Derivation: Generally made by the action of sulfuric acid on common salt. It is also obtained as a by-product of the Leblanc soda process. The salt and sulfuric acid are mixed and gently heated in an "open roaster" or in a muffle or "closed roaster." The hydrogen chloride gas generated is absorbed in water, either by passing through tall towers filled with coke over which the water trickles; or in earthenware Woulff bottles (bom-bonns), provided with safety tubes for back-pressure and with a coke tower at the end of the series. Glauber's salt, salt-cake form by-products.

Also made by burning hydrogen in an atmosphere of chlorine or causing hydrogen and chlorine to combine under pressure in the presence of catalysts.

Also formed as a by-product in the chlorination of benzol.

Method of purification: Rectification (to remove arsenic); sometimes fractional distillation over ferrous chloride.

Impurities: Iron and arsenic.

Grades: Technical (usually 18° , 20° , or

22°Be.); U. S. P.; C. P. (usually 20°Be. = sp. g. 1.16); B. P.
 Containers: Carboys; also shipped in wooden tank cars; glass bottles.
 Uses: Chrome tanning; leather industry; organic synthesis; dyestuff manufacture; inorganic preparations; chlorides; textile industry; medicine.
 Fire hazard: None.
 Railroad shipping regulations: White label.

Acid Hydrochloric, Fuming* Hydrochloric acid of sp. g. 1.19 containing about 37 per cent HCl, used as a reagent.

Acid Hydrocyanic* (Acid prussic, Hydrogen cyanide, Formonitrile) HCN. Color and properties: Colorless gas, (liquefies at -15°C.), appearing in commerce in aqueous solutions (generally 2 per cent or 10 per cent); colorless liquid; vapors intensely poisonous; odor of bitter almonds.
 Constants: Specific gravity (gas) 0.9483; melting-point (liquid anhydrous HCN) -15°C.; boiling-point (liquid anhydrous HCN) 26.1°C.
 Soluble in water, alcohol and ether.
 Derivation: By distilling a concentrated solution of potassium cyanide with dilute sulfuric acid and absorption of the vapors in water.
 Grades: Technical, strength 10 per cent, and 5 per cent; U. S. P., strength 2 per cent.
 Containers: Glass bottles.
 Uses: Chemical analysis; medicine; insecticide; organic synthesis; military poison gas.
 Fire hazard: None.
 Railroad shipping regulations: White label.

Acid Hydrofluoric* (Hydrogen fluoride) HF in aqueous solution. Color and properties: Clear, colorless, fuming, mobile, corrosive liquid; producing terrible sores when allowed to touch the skin.
 Constants: Specific gravity (gas) 0.7126; melting-point (anhydrous liquid) -92.3°C.; boiling-point (anhydrous liquid) 19.44°C.

Soluble in water.

Derivation: Powdered calcium fluoride is treated with sulfuric acid and the mixture distilled in a platinum retort. The hydrofluoric acid gas passes over and is dissolved in distilled water.

Grades: Technical, strength 30 per cent, 40 per cent, 48 per cent, 52 per cent; fuming.

Containers: Lead carboys; hard rubber or paraffin bottles; carboys; wooden barrels.

Uses: Ceramics; brewing and yeast; etching glass.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Hydrofluorsilicic. See Acid hydrofluosilicic.

Acid Hydrofluosilicic* (Acid silicofluoric; Acid hydrosilicofluoric; Acid hydrofluorsilicic; Sand acid) H_2SiF_6 .

Color and properties: Transparent, colorless, fuming liquid.

Soluble in water.

Derivation: When strong hydrofluoric acid acts upon sand, silicon tetrafluoride is liberated. It is generally made by heating sand with powdered calcium fluoride and sulfuric acid in excess. It is distilled as a gas and collected in distilled water. The commercial article comes largely from gases produced in phosphate manufacture.

Grades: Technical.

Containers: Lead carboys; hard rubber or paraffin bottles.

Uses: Ceramics; concrete floors; technical paints.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Hydrosilicofluoric. See Acid hydrofluosilicic.

Acid Hydroxyacetic. See Acid glycolic.

Acid Hypophosphorous* H_3PO_2 .

Color and properties: Clear, colorless liquid; sour odor.

Constants: Specific gravity 1.439; melting-point 26.5°C .

Soluble in water.

Derivation: Heating concentrated baryta water with white phosphorus and decomposing the barium hypophosphate with sulfuric acid, filtering the liquid and concentrating under reduced pressure.

Method of purification: Distillation.

Grades: Technical; U. S. P.; $31^{\circ}\text{Be.}=50$ per cent; $19^{\circ}\text{Be.}=35$ per cent; $17^{\circ}\text{Be.}=30$ per cent; $6.5^{\circ}\text{Be.}=10$ per cent; B. P.

Containers: Glass carboys.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Iodic* HIO_3

Color and properties: Colorless, rhombic crystals or white, crystalline powder.

Constants: Specific gravity 4.629; melting-point 110°C .

Soluble in cold and hot water.

Derivation: By adding sulfuric acid to a solution of barium iodate and subsequent filtration and crystallization.

Method of purification: Crystallization.

Containers: Glass bottles; tins.

Grades: Technical.

Uses: Analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Iodotannic* (Iodatannin).

Color and properties: Dark-brown liquid.

Soluble in alcohol.

Derivation: Alcoholic solution of tannin to which iodine is added.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Isocaproic. See Acid butylacetic.

Acid Isocyanuric. See Acid cyanuric.

Acid Isohexoic. See Acid butylacetic.

Acid Isotartaric. See Acid meta-tartaric.

Acid Kakodylic. See Acid cacodylic.

Acid Kinic. See Acid quinic.

Acid Kresotic. See Acid cresotic.

Acid Lactic* (Acid alpha-hydroxypropionic, Acid ethylidenelactic) $\text{CH}_3\text{CHOHCOOH}$.

Color and properties: Yellow or colorless, thick liquid.

Constants: Specific gravity 1.2485.

Soluble in water, alcohol and ether.

Derivation: By fermenting starch, corn, potatoes, milk, grape sugar solutions, etc., the best-known process being that called the "Avery" process, and neutralizing the acid as soon as formed, with calcium carbonate. The solution of calcium lactate is concentrated and decomposed with sulfuric acid and then filtered.

Impurities: Mineral acid.

Grades: Technical, 22-44 per cent; U. S. P.; B. P.

Containers: Wooden barrels; tank cars.

Uses: Leather industry; vegetable tanning; textile industry; mordanting; medicine; manufacture of lactates; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid, Laurent's. See Acid nitronaphthalenesulfonic 1:5.

Acid Liquor, Sulfite. See Sulfite acid liquor, page 509.

Acid Lithic. See Acid uric.

Acid Magnesium Phosphate. See Magnesium biphosphate.

Acid Maleic* (Acid maleinic)

$\text{COOH}(\text{CH})_2\text{COOH}$.

Color and properties: Colorless crystals, possessing a grating, nauseous acid taste.

Constants: Specific gravity 1.590; melt-

ing-point 136° - 137° C.; boiling-point 160° C.
Soluble in water, alcohol and ether.
Derivation: (a) From malic acid by distillation. (b) Prepared by heating the acetyl derivative of malic acid. (c) By the catalytic oxidation of benzol.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles; tins.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Maleinic. See Acid maleic.

Acid Malic*: (Acid oxysuccinic, Apple acid) $\text{C}(\text{OOHCH}_2\text{CH}(\text{OH}))\text{COOH}$.
Color and properties: Colorless crystals; agreeable, sour taste.
Constants: Specific gravity 1.601; melting-point 100° C.
Soluble in water; slightly soluble in ether and alcohol.
Derivation: (a) From unripe fruit of mountain ash. (b) By the reduction of tartaric acid with hydriodic acid.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles; tins.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Malonic* (Acid methanedicarboxylic) $\text{CH}_2(\text{COOH})_2$.
Color and properties: White crystals.
Constants: Melting-point 132° - 134° C.; boiling-point: decomposes.
Soluble in water, alcohol and ether.
Derivation: From monochloroacetic acid by action with potassium cyanide, followed by hydrolysis.
Method of purification: Crystallization.
Grades: Technical.
Containers: Tins.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Meconic*
 $\text{OHC}_6\text{HO}_2(\text{COOH})_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: White crystals. Soluble in water and in alcohol.
Derivation: From opium.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Metacetic. See Acid propionic.

Acid Metanilic. See Acid sulfanilic, Meta-.

Acid Meta-nitrohydroxybenzoic (Asymmetric). See Acid nitrosalicylic, Meta-.

Acid Meta-pyridinecarboxylic. See Acid nicotinic.

Acid Meta-phosphoric. See Acid phosphoric, Meta-.

Acid Meta-sulfanilic. See Acid sulfanilic, Meta-.

Acid Meta-tartaric* (Acid isotartaric) $\text{C}_2\text{H}_4\text{O}_2(\text{COOH})_2$.
Color and properties: Amorphous, yellowish-white mass.
Soluble in water.
Derivation: From normal tartaric acid by fusion.
Method of purification: Crystallization.
Grades: Technical.
Containers: Kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Meta-toluylic. See Acid toluic, Meta-.

Acid Methanecarboxylic. See Acid acetic.

Acid Methanedicarboxylic. See Acid malonic.

Acid Methylacetic. See Acid propionic.

Acid Methylbenzoic. See Acid toluic, Ortho-.

Acid Methylcrotonic. See Acid tiglic.

Acid Methylphenylformic. See Acid toluic, Ortho-.

Acid Methylsuccinic. See Acid pyrotartaric.

Acid, Mixed. Any mixture of sulfuric and nitric acids used for nitrating, e.g. in the manufacture of explosives and dyestuffs. Standard Mixed Acid consists of 36 per cent nitric and 61 per cent sulfuric.

Acid Molybdic* H_2MoO_4 .

Color and properties: White powder (sometimes slightly yellowish).

Constants: Specific gravity 3.1124.

Slightly soluble in water (soluble in alkaline solutions).

Derivation: Molybdenite (molybdenum sulfide) is roasted, the trioxide being formed. By the interaction of ammonium hydroxide and the trioxide, ammonium molybdate is formed which is dissociated by sulfuric acid.

Impurities: Ammonium salts, molybdenum oxide phosphates, tungstates, arsenates and nitric acid.

Grades: Technical; pure, strength about 85 per cent; C. P., about 99.5 per cent.

Containers: Kegs; drums; tins; glass bottles.

Uses: Medicine; analytical chemistry; metallurgy.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Mono "F". See Acid beta-naphthylaminemonosulfonic 2:7.

Acid Monobromoacetic (Acid bromoacetic) CH_2BrCOOH .

Color and properties: Colorless, deliquescent crystals. Keep from air and moisture.

Constants: Melting-point 51°C .; boiling-point 208°C .

Soluble in water, alcohol and ether.

Derivation: By heating acetic acid and bromine.

Method of purification: Crystallization from alcohol.

Grades: Technical.

Containers: Barrels; tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Monobromobenzoic, Para-* (Acid mono-para-bromobenzoic)
 $\text{C}_6\text{H}_4\text{BrCOOH}$.

Color and properties: Colorless or reddish crystals.

Constants: Melting-point 254°C .

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: From para-bromotoluene by oxidation.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Monobromobutyric, Alpha*
 $\text{CH}_3\text{CH}_2\text{CHBrCOOH}$.

Color and properties: Clear, colorless, oily liquid.

Constants: Specific gravity 1.54; boiling-point $214^\circ\text{--}217^\circ\text{C}$.

Soluble in alcohol and ether.

Derivation: By heating bromine and butyric acid.

Method of purification: Distillation.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Monobromopropionic* (Acid alpha-monobromopropionic)
 $\text{CH}_3\text{CHBrCOOH}$.

Color and properties: Colorless liquid.

Constants: Specific gravity 1.69; melting-point 24.5°C .; boiling-point 203°C .

Soluble in water, alcohol and ether.

Derivation: By heating propionic acid with bromine.

Method of purification: Distillation.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Monobromosuccinic (Acid bromosuccinic) $C_2H_3Br(COOH)_2$.
Color and properties: Colorless crystals.

Constants: Melting-point 159° - $160^{\circ}C$.
Soluble in water.
Derivation: By heating bromine and succinic acid.
Method of purification: Recrystallization.
Grades: Technical.
Containers: Wooden casks.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Monochloroacetic* $ClCH_2CO_2H$.
Color and properties: Very deliquescent, colorless, crystalline mass. Caustic! Do not get on skin.
Constants: Specific gravity 1.3978; melting-point $62.5^{\circ}C$; boiling-point 185° - $187^{\circ}C$.
Soluble in water, alcohol and ether.

Derivation: By passing dry chlorine into hot acetic acid in the presence of acetic anhydride, phosphorus or sulfur.
Grades: Technical, (Sp. gr. 1.366); pure.
Containers: Wooden barrels; kegs.
Uses: Organic synthesis; medicine; corn and wart removers.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Mono-para-bromobenzoic. See Acid monobromobenzoic, Para-.

Acid Monosulfonic "F". See Acid beta-naphthylaminemonosulfonic 27.

Acid Mucic* (Acid saccharolactic) $(OH)_4C_4H_4(COOH)_2$.
Color and properties: White, crystalline powder.
Constants: Melting-point $213^{\circ}C$.
Soluble in water; insoluble in alcohol.
Derivation: By the oxidation of lactose with nitric acid.

Method of purification: Crystallization.

Grades: Technical.
Containers: Tins.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Muriatic. See Acid hydrochloric.

Acid Naphthalic. See Acid phthalic.

Acid Naphthalenesulfonic*

$C_{10}H_7SO_3H \cdot H_2O$.
Color and properties: Deliquescent crystals.
Constants: Melting-point $85^{\circ}C$ - $90^{\circ}C$.
Soluble in water, alcohol and ether.
Derivation: By the interaction of naphthalene and sulfuric acid.
Method of purification: Crystallization.
Containers: Wooden barrels; kegs.
Grades: Technical.
Uses: Making naphthols; organic preparations.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Naphthalenesulfonic, Beta-*

$C_{10}H_7SO_3H$.
Color and properties: Non-deliquescent, white plates.
Soluble in water, alcohol and ether.
Derivation: By the sulfonation of naphthalene.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden barrels.
Uses: Making beta-naphthol; organic preparations.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Naphthionic. See Acid alpha-naphthylaminesulfonic 1:4.

Acids, Naphthol-beta-sulfonic. See Acid, Baeyer's; Acid, Schaeffer's; Acid, Cassella's.

Acid, Neville and Winther's. See Acid alpha-naphtholsulfonic 1:4.

Acid Nicotinic* (Acid meta-pyridinecarboxylic, Acid beta-pyridinecarboxylic) C_5H_4NCOOH .

Color and properties: White crystals. Constants: Melting-point $228^{\circ}C$; boiling-point: Sublimes.

Soluble in hot alcohol; slightly soluble in water and ether.

Derivation: By the interaction of quinolinic and hydrochloric acids.

Method of purification: Crystallization.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid, Nitrating.* A mixture of sulfuric and nitric acid (often called "mixed acid") used for nitrating cellulose, phenol, toluol, etc.

Acid Nitric* (Aqua fortis, Hydrogen nitrate, Acid azotic) HNO_3 .

Color and properties: Transparent, colorless or yellowish, fuming, suffocating, caustic and corrosive liquid.

Constants: Specific gravity 1.530; melting-point $-41.3^{\circ}C$; boiling-point $86^{\circ}C$.

Soluble in water and alcohol.

Derivation: (a) Until the establishment of plants to obtain nitric acid by the fixation of atmospheric nitrogen, nitric acid was made by the action of sulfuric acid on sodium nitrate. The sodium nitrate used is purified Chili saltpeter, 98-99 per cent. It must be free from chlorides. The nitrate of soda and sulfuric acid are heated in a retort and the vapors which escape are condensed in a series of glass or earthenware Woulff bottles, or in condensers of special form and materials. At the end of the series is placed a coke tower, fed with water or concentrated sulfuric acid to condense the fumes, escaping from the bombonns. In the Valentiner process, distillation is performed in a vacuum. (b) Oxidation of ammonia obtained from coal-tar ammonia, the modified Haber process and various other nitrogen fixation processes.

Method of purification: Rectification.

Grades: Technical (usually 36° to $44^{\circ}Be$. Grade generally known as Aqua fortis being about $41\frac{1}{2}^{\circ}Be$. or 65.67 per cent HNO_3); U. S. P.; B. P.; Pure; Fuming (See Acid nitric, Fuming).

Strength of solutions: 38° , 40° , 42° , $43^{\circ}Be$.

Containers: Carboys; glass bottles. Often shipped mixed with concentrated sulfuric acid in iron drums or tank cars.

Uses: Organic synthesis; manufacture of dyestuffs, drugs, explosives, celluloid and nitrates; metallurgy; medicine; photo-engraving; etching steel tools and the like.

Fire hazard: Dangerous.

Railroad shipping regulations: White label.

Acid Nitric, Fuming (Acid nitrosonitric)

Acid nitric (which see) containing more than 86 per cent HNO_3 , and having a sp.g. above 1.480.

Caution! Violently corrosive and will promote combustion in contact with most organic substances.

Acid Nitrobenzoic, Meta.*

$C_6H_4(NO_2)COOH$.

Color and properties: Yellowish-white crystals

Constants: Specific gravity 1.494, melting-point 140° - $141^{\circ}C$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By the nitration of benzoic acid

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None

Railroad shipping regulations: None.

Acid Nitrobenzoic, Ortho.*

$C_6H_4(NO_2)COOH$.

Color and properties: Yellowish-white crystals.

Constants: Specific gravity 1.575; melting-point $147.7^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By the nitration of benzoic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Nitrobenzoic, Para-* (Acid nitrodracrylic) $C_6H_4(NO_2)COOH$.

Color and properties: Yellowish-white crystals.

Constants: Specific gravity 1.5497; melting-point $238^\circ C$.

Soluble in alcohol; sparingly soluble in water.

Derivation: By the oxidation of para-nitrotoluene by hot chromic acid mixture.

Method of purification. Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Nitrodracrylic. See Acid nitrobenzoic, Para-.

Acid Nitro-muriatic. See Aqua regia.

Acid Nitronaphthalenesulfonic* (Laurant's acid) $C_{10}H_6(NO_2)(SO_3H)$ 1.5.

Color and properties: Pale-yellow needles.

Soluble in water, alcohol and ether.

Derivation: By sulfonating nitronaphthalene with a mixture of chlorhydrin and sulfuric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Nitrosalicylic, Meta-* (Acid meta-nitrohydroxybenzoic, Asymmetric) $C_6H_3COOH:OH:NO_2$.

Color and properties: Yellowish crystals.

Constants: Melting-point $235^\circ C$.

Soluble in water and in alcohol.

Derivation: By the nitration of salicylic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Nitrosonitric. See Acid nitric, Fuming.

Acid Ceananthic (Acid hepotic, Normal, Acid heptylic, Acid α nanthylic) $CH_3(CH_2)_5COOH$.

Color and properties: Clear, oily liquid; unpleasant odor.

Constants: Specific gravity 0.9212; melting-point $-10.5^\circ C$; boiling-point $223^\circ C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By oxidizing α nanthol with potassium bichromate and sulfuric acid.

Method of purification: Distillation.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid C α nanthylic. See Acid α nanthnic.

Acid Octoic. See Acid caprylic.

Acid Octylic. See Acid caprylic.

Acid Oleic* (Acid oleinic, "Red oil")

$C_8H_{17}CHCH(CH_2)_7CO_2H$.

Color and properties: Yellowish, oily liquid.

Constants: Specific gravity 0.8908; melting-point $-10.5^\circ C$; boiling-point $222.4^\circ C$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: From olein, the glyceride of oleic acid, the free fatty acid (mixed with other acids) is obtained by the Twitchell or some other splitting process. The fatty acids obtained are redistilled with steam or

allowed to stand for a few days in shallow pans at about 30°C. when the palmitic and stearic acids crystallize. The magma is first pressed cold and then at 40°C. in bags in a hydraulic press; the liquid oleic acid separated forms the commercial "red oil."

Impurities: Linolic and other fatty acids, soap, etc.

Grades: Technical; U. S. P. (Sp. gr 0.898 at 15°C.); B. P.

Containers: Barrels.

Uses: Soap stock; manufacture of oleates; medicine; polishing compounds; oiling wool.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Oleinic. See Acid oleic.

Acid Ortho-aminobenzoic. See Acid anthranilic.

Acid Ortho-aminobenzoylformic. See Isatin.

Acid Ortho-arsenic* $\text{H}_3\text{AsO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$.

Color and properties: White, crystalline powder.

Constants: Specific gravity 2.5; melting-point 35.5°C.

Soluble in water and alkalis.

Derivation: Arsenic or arsenic oxide is treated with concentrated nitric acid, or with chlorine and water.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Medicine; insecticides.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Ortho-boric. See Acid boric.

Acid Ortho-hydroxybenzoic. See Acid salicylic.

Acid Ortho-phosphoric. See Acid phosphoric.

Acid Ortho-phthalic. See Acid phthalic.

Acid Osmic, Anhydride* (Osmium tetroxide, Perosmic anhydride, Perosmic oxide) OsO_4 .

Color and properties: Yellowish crystals; very pungent, disagreeable odor; highly poisonous; vapor irritating when breathed.

Constants: Specific gravity 8.89; melting-point 20°C.; boiling-point 100°C.

Soluble in water, alcohol and ether.

Derivation: By heating powdered osmium in air, or by treating it with nitric acid, aqua regia, or chlorine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; microscopic reagent; photography; incandescent gas mantles.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Oxalic* $\text{CO}_2\text{H} \cdot \text{CO}_2\text{H} \cdot \text{H}_2\text{O}$.

Color and properties: Transparent, colorless crystals; poisonous.

Constants: Specific gravity 1.653; melting-point 187°C.

Soluble in water, alcohol and ether.

Derivation: (a) By passing carbon monoxide into a hot concentrated solution of sodium hydroxide under pressure, and subsequent conversion of the sodium formate thus formed into the oxalate, followed by the conversion of the latter into the acid. (b) Sawdust treated with dilute acids or alkalis yields a solution containing oxalic acid or alkali oxalate.

Method of purification: Crystallization.

Grades: Technical (crystals and powder).

Containers: Wooden barrels.

Uses: Dyestuff industry; purifying glycerine; purifying stearine; bleaching straw; metal polishes; textile industries; ink and rust removers; tanning; analytical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Oxyacetic. See Acid glycolic.

Acid Oxybenzoic, Meta-*

$\text{C}_6\text{H}_4(\text{OH})\text{COOH} \cdot \text{H}_2\text{O}$.

Color and properties: Colorless crystals.
Constants: Melting-point 210°C .
Soluble in alcohol.
Derivation: By the action of meta-aminobenzoic acid and nitrous acid.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Oxybenzoic, Para-*

$\text{C}_6\text{H}_4(\text{OH})\text{COOH} \cdot \text{H}_2\text{O}$.
Color and properties: Colorless crystals.
Constants: Melting-point 210°C .
Soluble in alcohol and in ether.
Derivation: By the interaction of para-aminobenzoic acid and nitrous acid.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Oxybutyric, Beta*

$\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{COOH}$.
Color and properties: Viscid, yellow mass.
Soluble in water.
Derivation: By the interaction of acetoacetic acid and sodium amalgam.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Oxyphenic. See Pyrocatechin.

Acid Oxysuccinic. See Acid malic.

Acid Oxytricarballic. See Acid citric.

Acid Palmitic* (Acid palmitinic, Acid cetyllic) $\text{C}_{16}\text{H}_{32}\text{O}_2$.
Color and properties: White crystals.
Constants: Specific gravity 0.8465; melting-point 63.4°C .; boiling-point $138^{\circ}\text{--}139^{\circ}\text{C}$.

Soluble in alcohol and ether; insoluble in water.
Derivation: From spermaceti by saponification.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden barrels.
Uses: Soap stock.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Palmitinic. See Acid palmitic.

Acid Para-aminobenzenesulfonic. See Acid sulfanilic, Para-, page 503.

Acid Para-aminobenzoic (Acid aminodracylic) $\text{NH}_2\text{C}_6\text{H}_4\text{CO}_2\text{H}$.
Color and properties: Yellow crystals.
Constants: Melting-point: Decomposes at 158°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By nitration of benzoic acid and subsequent reduction.
Grades: Technical.
Containers: Barrels and kegs.
Uses: Dyes; drugs; perfumes.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Para-aminobenzolsulfonic. See Acid sulfanilic, Para-, page 503.

Acid Para-aminophenylarsinic. See Acid arsanilic.

Acid Para-aminosalicylic*

$\text{NH}_2\text{C}_6\text{H}_3(\text{OH})\text{CO}_2\text{H}$.
Color and properties: Grayish-white crystals.
Soluble in alcohol; insoluble in water.
Derivation: By nitration and reduction of salicylic acid.
Method of purification: Crystallization.
Grades: Technical.
Containers: Barrels; kegs.
Uses: Intermediates; manufacture of transfer paper.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Para-anilinesulfonic. See Acid sulfanilic, Para-, page 503.

Acid Para-cresotinic. See Acid cresotic.

Acid Para-cresylic. See Cresol, Para-.

Acid Para-mandelic. See Acid amygdalic.

Acid Para-rosilic. See Acid rosolic.

Acid Para-sulfanilic. See Acid sulfanilic, Para-, page 503.

Acid Para-tartaric. See Acid racemic.

Acid Para-toluylic. See Acid toluic, Para-.

Acid Pentiformic. See Acid caproic.

Acid Pentoic, Primary. See Acid valeric, Iso.

Acid Perchloric* (Fraude's reagent)

HClO_4 .

Color and properties: Clear, colorless liquid concentrated solutions explosive.

Constants: Specific gravity 1.764.

Soluble in water.

Derivation: By distilling potassium perchlorate with strong sulfuric acid (96 per cent), under reduced pressure in an oil bath at $140^\circ\text{--}190^\circ\text{C}$.

Method of purification: Rectification.

Grades: Technical, strength of solution 6-20 per cent.

Containers: Glass bottles.

Uses: Medicine; analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Periodic* $\text{HIO}_4 \cdot 2\text{H}_2\text{O}$.

Color and properties: White crystals.

Constants: Melting-point $130^\circ\text{--}133^\circ\text{C}$.

Soluble in water, alcohol and ether.

Derivation: By the interaction of iodine and concentrated perchloric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Oxidizing material.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Acid Phenoldisulfonic*

$\text{C}_6\text{H}_3\text{OH}(\text{SO}_3\text{H})_2$.

Color and properties: Deliquescent, colorless needles.

Soluble in water and alcohol.

Derivation: By the interaction of phenol and sulfuric acid with sulfurous acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Phenolsulfonic* (Acid sulfocarbolic) $\text{C}_6\text{H}_5\text{SO}_3\text{H}$.

Color and properties: Yellowish liquid, becoming brown on exposure to air. A mixture of ortho- and para-phenolsulfonic acids.

Soluble in water and in alcohol.

Derivation: By the action of sulfuric acid on phenol.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Phenylacetic* (Acid alpha-toluic)

$\text{C}_6\text{H}_5\text{CH}_2\text{CO}_2\text{H}$.

Color and properties: Shiny, white plates.

Constants: Specific gravity 1.0809; melting-point 76°C ; boiling-point 262°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of benzyl cyanide and alkali and hydrolyzing the nitril thus formed.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tin cans.

Uses: Perfumes; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Phenylboric. See Acid borophenyl-ic.

Acid Phenylcinchonine (Phenylquinoline carboxylic acid) $C_6H_5C_9H_7NCO_2H$. Color and properties: Small, colorless needles or yellowish-white to white, crystalline powder; faint odor resembling benzoic acid; bitter taste.

Constants: Melting-point $270^{\circ}C$.

Soluble in hot alcohol; slightly soluble in ether and cold alcohol; insoluble in water.

Derivation: (a) By warming peruvic acid with benzoic aldehyde, aniline and alcohol. (b) By heating isatin with acetophenone and alcoholic potash.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Phenylformic. See Acid benzoic.

Acid Phenylglycolic. See Acid amygdalic.

Acid Phenylhydroxyacetic. See Acid amygdalic.

Acid Phenylic. See Phenol.

Acid Phenylpropionic* $C_6H_5C_2COOH$.

Color and properties: Colorless needles. Keep dark. (Used in the form of sodium phenylpropionate.)

Constants: Melting-point 136° - $137^{\circ}C$; boiling-point: sublimes.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating ethylcinnamic dibromide with alcoholic potash.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron drums; amber glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Phosphate. See Calcium phosphate, Monobasic.

Acid Phosphomolybdic* (Sonnenschein's reagent) $H_3PO_4.12MoO_8$.

Color and properties: Yellowish crystals.

Soluble in water, alcohol and ether.

Derivation: By heating ammonium phosphomolybdate with aqua regia.

Method of purification: Crystallization.

Impurities: Heavy metals.

Grades: Technical.

Containers: Glass bottles.

Uses: Reagent for alkaloids.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Phosphoric (Ortho-phosphoric acid) H_3PO_4 .

Color and properties: Clear, colorless, sirupy liquid.

Constants: Specific gravity 1.884; melting-point $38.6^{\circ}C$.

Soluble in water.

Derivation: By decomposing bone ash (tricalcium phosphate) by heating it with the calculated quantity of dilute sulfuric acid. The solution is filtered and concentrated. It is obtained in a purer form by oxidizing white phosphorus, first in air and then with nitric acid and evaporating the solution.

Grades: Technical; U. S. P.; B. P.

Containers: Carboys.

Strength: $60^{\circ}Be$, 85 per cent; crude paste; $48^{\circ}Be$, 50 per cent; commercially pure; $44^{\circ}Be$, 40 per cent; chemically pure; $34^{\circ}Be$.

Uses: Preparation of various phosphates; preparation of hydrogen peroxide; sugar industry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Phosphoric, Anhydrous* (Phosphorus pentoxide) P_2O_5 .

Color and properties: Soft, white powder.

Constants: Specific gravity 2.387; melting-point $800^{\circ}C$.

Soluble in water.

Derivation: By burning phosphorus in iron cylinders in a current of dry air.

Grades: Technical.

Containers: Iron canisters, hermetically sealed; sealed glass vials.

Uses: Preparation of phosphoric acids; dehydrating agent; organic synthesis; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Acid Phosphoric, Glacial* HPO_3 .

Color and properties: Transparent, highly deliquescent, glassy mass.

Constants: Specific gravity 2.2-2.488.

Soluble in water.

Derivation: By heating phosphoric acid to redness; it is also easily obtained by treating phosphorus pentoxide with the calculated quantity of water or by heating diammonium phosphate.

Grades: Technical; C. P.

Containers: Glass bottles.

Uses: Pharmacy; medicine; phosphates; analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Phosphotungstic* (Phosphowolframic acid) $2(\text{H}_3\text{P}\text{O}_4)_2\text{WO}_3-39\text{H}_2$

Color and properties: Heavy, greenish crystals.

Soluble in water, alcohol and ether.

Derivation: By heating ammonium phosphotungstate with aqua regia.

Method of purification: Crystallization.

Grades: Technical; C. P.

Containers: Glass bottles.

Uses: Reagent for alkaloids.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Phosphowolframic. See Acid phosphotungstic.

Acid Phthalic* (Acid orthophthalic, Acid naphthalic) $\text{C}_6\text{H}_4(\text{CO}_2\text{H})_2$.

Color and properties: Colorless crystals.

Constants: Specific gravity 1.585; melting-point 213°C .

Soluble in alcohol; sparingly soluble in water and ether.

Derivation: (a) By oxidizing naphthalene with fuming sulfuric acid in presence of cerium or thorium salts which act catalytically. (b) By elec-

trolysis of naphthalene in presence of an acid solution of a cerium compound.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Synthesis of indigo; pyronine dyes; medicine; phenolphthalein.

Fire hazard: None.

Railroad shipping regulations: None.

Acid, Phthalic, Anhydride. See Phthalic anhydride.

Acid, Pickling. Sulfuric acid, usually 60°Be , used for treating iron and steel wire, plates, etc.

Acid Picramic* (Acid picraminic, Dinitroaminophenol)

$\text{C}_6\text{H}_2(\text{NO}_2)_2(\text{NH}_2)\text{OH}$.

Color and properties: Red crystals.

Constants: Melting-point 168°C .

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By partial reduction of picric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Barrels; kegs.

Uses: Azo dyestuffs.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Acid Picraminic. See Acid picramic.

Acid Picric* (Acid picronitric, Trinitrophenol) $\text{C}_6\text{H}_2(\text{NO}_2)_3\text{OH}$.

Color and properties: Very poisonous, explosive especially in contact with metals or metallic oxides. Yellow crystals.

Constants: Specific gravity 1.767; melting-point 122°C .

Soluble in water, alcohol and in ether.

Derivation: (a) By the nitration of monochlorobenzol in presence of sulfuric acid. (b) By the nitration of the mixture of phenol-sulfuric acid, obtained by heating phenol with concentrated sulfuric acid.

Grades: Technical, U. S. P.; B. P.

Containers: Wooden kegs or boxes free from metal nails or screws. Iron barrels with special linings.

Uses: Explosives, Dyeing silk; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Acid Picronitric. See Acid picric.

Acid Plumbic, Anhydrous. See Lead oxide, Brown.

Acid, Polishing. Oxalic, hydrochloric, nitric or sulfuric acid.

Acid Potassium Oxalate. See Potassium binoxalate.

Acid Potassium Sulfate. See Potassium bisulfate.

Acid Propionic* (Acid methylacetic, Acid metactonic, Acid ethylcarbonic)
 $\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$.

Color and properties: Clear, colorless liquid.

Constants: Specific gravity 0.9870; melting-point -19.3°C .; boiling-point 140.7°C .

Soluble in water, alcohol and ether.

Derivation: From beet-root molasses by the Effront process and subsequent fractional distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; carboys.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Propylacetic. See Acid valeric, Normal.

Acid Propylformic. See Acid butyric.

Acid Prussic. See Acid hydrocyanic.

Acid Pyrocatechinic. See Pyrocatechin.

Acid Pyrogallic* (Pyrogallol)

$\text{C}_6\text{H}_3(\text{OH})_3$.

Color and properties: White, lustrous crystals.

Constants: Specific gravity 1.463; melting-point 132.5°C .; boiling-point 293°C .

Soluble in water, alcohol and in ether. Derivation: By heating gallic acid with three times its weight of water, in an autoclave.

Grades: Technical; U. S. P.

Containers: Wooden barrels; kegs.

Uses: Photography.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Pyroligneous* (Wood vinegar, Pyroligneous vinegar) $\text{H}_2\text{C}_2\text{H}_3\text{O}_2$.

Color and properties: Yellowish liquid; strong odor of furfural; containing 7 per cent acetic acid.

Constants: Specific gravity 1.018-1.030.

Soluble in water and alcohol.

Derivation: By the destructive distillation of wood.

Method of purification: Rectification.

Impurities: Methyl alcohol; pyridine.

Grades: Technical.

Containers: Wooden barrels.

Uses: Lime acetate; methyl alcohol.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Pyromucic* $\text{C}_4\text{H}_3\text{O}_4\text{COOH}$.

Color and properties: Yellowish crystals.

Constants: Melting-point 134°C .

Soluble in water, alcohol and ether.

Derivation: By oxidation of furfural.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tin cans.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Pyrotartaric* (Acid methylsuccinic)
 COOH.CH .

Color and properties: White or yellowish crystals.

Constants: Specific gravity 1.4105; melting-point 117° - 118°C .

Soluble in water, alcohol and ether.

Derivation: By distilling tartaric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Pyrotartaric, Normal. See Acid glutaric.

Acid Quercitinic. See Quercitin.

Acid Quercitrinic. See Quercitrine.

Acid Quinic* (Acid chinic, Acid kinic)
 $C_6H_7(OH)_4COOH \cdot H_2O$.

Color and properties: White, transparent crystals; very acid taste.

Constants: Specific gravity 1.637; melting-point $160^{\circ}C$; boiling-point: Decomposes.

Soluble in water and alcohol; insoluble in ether.

Derivation: From cinchona bark.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Quininic.

$CH_3OC_9H_5NCO_2H$.

Color and properties: Yellow prisms.

Constants: Melting-point: Decomposes at $280^{\circ}C$; boiling-point: Sublimes in part.

Slightly soluble in alcohol; very slightly soluble in water and ether.

Grades: Technical.

Containers: Glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid R. See Acid naphtholdisulfonic, Beta-.

Acid RG. Acid naphtholdisulfonic Alpha.

Acid Racemic* (Acid para-tartaric, Acid, tartaric, inactive, Acid uvic)

$C_2H_4O_2(COOH)_2 \cdot H_2O$.

Color and properties: Transparent, colorless crystals.

Constants: Specific gravity 1.697; melting-point $205^{\circ}-206^{\circ}C$.

Soluble in water and alcohol.

Derivation: A by-product of the manufacture of tartaric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; boxes; wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Ricinoleic* $C_{17}H_{32}(OH)COOH$.

Color and properties: Yellowish, viscous liquid (solid at $15^{\circ}C$).

Constants: Specific gravity 0.945; melting-point $16^{\circ}C$; boiling-point $250^{\circ}C$.

Soluble in alcohol, ether and chloroform; insoluble in water.

Derivation: Saponification of castor oil.

Method of purification: Rectification.

Grades: Technical.

Containers: Wooden barrels.

Uses: Soaps; Turkey red oils; textile finishing.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Rosolic* (Acid para-rosolic)

$C_{20}H_{16}O_3$.

Color and properties: Red lumps.

Constants: Melting-point $270^{\circ}C$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By oxidizing a mixture of phenol and cresol with arsenic acid and sulfuric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Dyestuffs; analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Acid S. Acid aminonaphtholsulfonic 1:8:4.

Acid Saccharolactic. See Acid mucic.

Acid Salicylic* (Acid ortho-hydroxybenzoic) $C_6H_4(OH)(COOH)$.

Color and properties: White crystals.

Constants: Specific gravity 1.483; melting-point $156^{\circ}C-159^{\circ}C$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By treatment of a hot solution of sodium phenolate with carbon dioxide, and acidifying the sodium salt thus formed.

Method of purification: Sublimation.

Grades: Technical; U. S. P.; B. P.

Containers: Barrels, boxes.

Uses: Preservative; dyestuffs; perfumes; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Salicylous (Salicylic aldehyde, Ortho-oxybenzaldehyde)
 C_6H_4OHCOH .

Color and properties: Yellow oil; aromatic odor.

Constants: Specific gravity 1.165-1.172; melting-point $-10^{\circ}C$; boiling-point $106^{\circ}C$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By the interaction of phenol and chloroform in presence of aqueous alkali.

Method of purification: Distillation.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

acid, Sand. See Acid Hydrofluosilicic.

acid, Schaeffer's. See Acid beta-naphtholsulfonic 2:6.

acid Selenious. See Acid selenous.

Acid Selenous* (Acid selenious)

H_2SeO_3

Color and properties: Transparent, colorless crystals.

Constants: Specific gravity 3.0066; melting-point: Decomposes.

Soluble in water and alcohol.
 Derivation: By the action of hot nitric acid on selenium.

Method of purification: Sublimation.

Grades: Technical.

Containers: Glass bottles.

Uses: Chemical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

acid Silicofluoric. See Acid hydrofluosilicic.

acid Silicotungstic* (Acid silicowolframic) $4H_2SiO_2 \cdot 12WO_3 \cdot 22H_2O$.

Color and properties: White to yellowish-white crystals.

Soluble in water and alcohol.

Derivation: By heating ammonium silicotungstate with aqua regia.

Method of purification: Crystallization.

Grades: Technical.

Containers: Kegs; glass bottles.

Uses: Chemical reagent for alkaloids; mordant for basic dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Silicowolframic. See Acid silicotungstic.

Acid, Sludge. Waste or spent sulfuric acid, usually that from refining petroleum oils or crude benzols.

Acid, Soldering. See Acid hydrochloric.

Acid Stannic* H_2SnO_3

Color and properties: White powder.

Insoluble in water.

Derivation: A solution of stannic chloride is treated with ammonium hydroxide, a white gelatinous precipitate being formed. The precipitate loses water gradually until the dioxide remains.

Grades: Technical.

Containers: Barrels.

Uses: Preparation of tin salts; textile industry.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Stearic* (Acid stearinic, Acid cetylacetic, Acid stearophanic)

$CH_3(CH_2)_{16}CO_2H$.

Color and properties: Solid, white, glossy, odorless mass.

Constants: Specific gravity 0.8428; melting-point $69.32^{\circ}C$; boiling-point $201^{\circ}C$.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: From natural fats and oils by splitting, followed by cooling, pressing, distilling, etc., or from oleic acid by hydrogenation.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Barrels.

Uses: Manufacture of candles; stearates.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Stearic. See Acid stearic.

Acid Stearophanic. See Acid stearic.

Acid Succinic* (Acid ethylenesuccinic, Acid ethylenedicarboxylic)



Color and properties: Colorless crystals.

Constants: Specific gravity 1.552; melting-point 185°C ; boiling-point 235°C . Soluble in water; sparingly soluble in alcohol and ether.

Derivation: By the fermentation of ammonium tartrate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Sulfanilic, Meta- (Acid metanilic)
 $\text{C}_6\text{H}_4(\text{NH}_2)\text{SO}_3\text{H}$ 1:3.

Color and properties: Small colorless needles.

Soluble in water, alcohol and ether.

Derivation: By the reduction of metanitrobenzenesulfonic acid. Nitrobenzene is sulfonated until the product is soluble in water. The mixture is then poured into water and reduced with iron, made alkaline with lime and the lime salt dissociated with sodium carbonate.

Grades: Technical.

Containers: Barrels; kegs.

Uses: Dyestuffs; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Sulfanilic, Para- See page 503.

Acid Sulfethylic. See Acid ethylsulfuric.

Acid Sulfite Liquor. See Sulfite acid liquor, page 509.

Acid Sulfocholeic. See Acid taurocholic.

Acid Sulfovinic. See Acid ethylsulfuric.

Acid Sulfovinous. See Acid ethylsulfurous.

Acid Sulfuric* (Oil of vitrol) H_2SO_4 .

Color and properties: Strongly corrosive, dense, oily liquid; colorless to dark brown, depending on purity. Ordinary commercial (not pure) acid dissolves all metals, including platinum, although the latter dissolves very slowly. Concentrated acid (65 per cent) when cold, attacks iron, aluminum, copper and lead slowly. Heating the concentrated acid increases its action on metals, except when the boiling-point of the acid is passed. Dilute acid dissolves aluminum, chromium, cobalt, copper, iron, manganese, nickel, zinc and other metals, particularly if heated. It does not dissolve lead or mercury, and has very little action on high-silica iron. Sulfuric acid* rapidly disintegrates wood, rubber, textiles and organic materials in general.

Constants: Specific gravity 1.8342; melting-point 10.46°C ; boiling-point $210^\circ\text{--}338^\circ\text{C}$.

Soluble in water in all proportions with evolution of heat.

Derivation: (a) Chamber Process—Pyrites or sulfur is roasted in specially designed furnaces and the sulfur dioxide collected in a lead chamber, in presence of water, oxygen (or air) and nitrous anhydride. First there is a union of sulfur dioxide, nitrous anhydride, oxygen and water to form nitrosylsulfuric acid. But in presence of water vapor, this nitrosylsulfuric acid is at once decomposed, sulfuric acid being formed and nitrous anhydride regenerated. The oxidation of the sulfur dioxide to sulfur trioxide is due to the interaction of the various oxides of nitrogen with sulfur dioxide and subsequent dissociation of the nitrosulfuric and nitrososulfuric acids. The chamber acids are concentrated in various forms of evaporating devices built of lead, platinum, stoneware, acid-proof metal, fused silica, acid-proof brick, etc.

(b) Catalytic process (Contact process)—The raw materials are sulfur dioxide from pyrites or sulfur and

oxygen from the air to produce sulfur trioxide which is absorbed in water. Any concentration of acid can be made. The combining of the sulfur dioxide and oxygen is carried on in presence of a catalyzer. The catalyzers most in use are spongy platinum and iron oxide from pyrites burners. The gases from the furnaces are cleansed by cooling, scrubbing with water, injecting steam or filtering. Flue dust, sulfur vapors, arsenic, phosphorus, or mercury compounds present in the mixed gases, must be removed to prevent injurious effects on the contact mass.

(c) Much sulfuric acid is made from waste gases of copper or zinc smelters (which are rich in sulfur dioxide) by the chamber process.

Method of purification: Distillation.

Impurities: Arsenic; iron; lead sulfate.

Grades: Technical: The commonest grades are:—"Chamber Acid", 53° Be. or 66.6 per cent H_2SO_4 ; "Tower Acid", 66° Be. or 77.7 per cent H_2SO_4 ; "66 Acid", 66° Be. or 93.2 per cent H_2SO_4 ; "98 Acid" or "Contact Acid", 98 per cent H_2SO_4 ; Oleum, 100 per cent H_2SO_4 with various additional amounts of SO_3 in solution; Oil of vitriol (O.V.) by which 66° Be. acid is generally meant. The uses of sulfuric acid are so numerous that almost every strength of acid appears in commerce for some purpose; U. S. P. Sp.G. 1.826 at 25°C., 92.5 per cent H_2SO_4 ; U. S. P. Dil. Sp.G. 1.067 at 25°C., 10 per cent H_2SO_4 ; B. P.

Containers: Carboys; iron drums; tank cars; glass bottles.

Strength: Commercial: 66° Baume.

Uses: Fertilizers; petroleum refining; explosives; organic synthesis; leather industry; textile industry; metallurgical; inorganic preparations; sulfates; electric batteries; pickling iron and steel; making alum, hydrochloric acid, nitric acid, etc.; rubber industry.

Fire hazard: Dangerous.

Railroad Shipping regulations: White label.

Acid Sulfuric, Aromatic* (Elixir of vitriol)

Color and properties: Straw-colored liquid; peculiar, aromatic odor; pleasant acid taste when diluted.

Soluble in water.

Derivation: A mixture of sulfuric acid with alcohol, tincture of ginger, and oil of cinnamon.

Grades: U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid, Sulfuric, Fuming. Sulfuric acid, 100 per cent H_2SO_4 + additional amounts of SO_3 —generally about 20 per cent.

Acid Sulfurous* H_2SO_3 .

Color and properties: Colorless liquid; suffocating sulfur odor.

Soluble in water.

Derivation: By calcining pyrites and absorbing the gas in water; concentration by means of stills.

Grades: Technical; B. P.

Containers: Carboys.

Uses: Organic synthesis; bleaching straw hats, wicker-ware, textiles, etc.; paper manufacture; wine manufacture; brewing; metallurgy; medicine; reagent in analytical chemistry; sulfites.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Sulfurous, Anhydride. See Sulfur dioxide.

Acid Tannic* (Acid gallotannic, Tannin, Acid digallic) $\text{C}_{10}\text{H}_{14}\text{O}_9$.

Color and properties: Lustrous, faintly yellowish, amorphous powder.

Constants: Melting-point: Decomposes at 210°C.

Soluble in water and alcohol; very slightly soluble in ether.

Derivation: Extraction of powdered gall-nuts with water and alcohol, evaporation and subsequent crystallization.

Grades: Technical; U. S. P.; B. P.

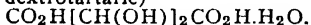
Containers: Wooden barrels; kegs.

Uses: Medicine; textile industry; tannates.

Fire hazard: None.
 Railroad shipping regulations: None.

Acid Tantalic. See Tantalum oxides.

Acid Tartaric* (Acid dioxysuccinic, Acid dextrotartaric)



Color and properties: Colorless, transparent crystals.

Constants: Specific gravity 1.7598; melting-point 170°C .

Soluble in water, alcohol and ether.

Derivation: Wine-lees containing cream of tartar and calcium tartrate are treated with sufficient milk of lime to convert the cream of tartar into calcium tartrate. The calcium tartrate is dissociated with sulfuric acid, the solution filtered and the tartaric acid obtained by crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Barrels; kegs.

Uses: Dyeing industry; medicine; effervescent beverages.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Tartaric, Inactive. See Acid racemic.

Acid Taurocholic* (Acid choleic, Acid choleinic, Acid choliaic, Acid sulfocholeic) $\text{C}_{26}\text{H}_{45}\text{NSO}_7$.

Color and properties: Yellowish, crystalline mass.

Soluble in water and alcohol.

Derivation: Obtained from ox bile.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Telluric* (Trihydrated telluric oxide, Dihydrated telluric hydroxide) H_2TeO_4 .

Color and properties: White crystals.

Constants: Specific gravity 3.425; melting-point: Decomposes at 160°C .

Soluble in hot water and alkalis; insoluble in cold water.

Derivation: By the action of sulfuric acid on barium tellurate.

Method of purification: Crystallization.

Grades: Technical.

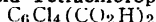
Containers: Glass bottles.

Uses: Chemical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Tetrachlorophthalic*



Color and properties: Colorless, crystalline plates.

Soluble in hot water; sparingly soluble in cold water.

Derivation: By passing a stream of chlorine through a mixture of phthalic anhydride and antimony pentachloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.*

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Thiactic.* See Acid thioacetic.

Acid Thioacetic* (Acid thiactic, Acid ethanethiolic) CH_3COSH .

Color and properties: Clear liquid; pungent, acetic and hydrogen sulfide odor.

Constants: Specific gravity 1.074; melting-point -17°C ; boiling-point 93°C .

Soluble in water, alcohol and ether.

Derivation: By heating glacial acetic acid and phosphorus pentasulfide, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Chemical reagent.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Thymic. See Thymol.

Acid Tiglic* (Acid methylcrotonic, Acid crotonolic) $\text{CH}_3\text{CH}(\text{CH}_3)\text{CO}_2\text{H}$

Color and properties: Thick, sirupy liquid or colorless crystals; very poisonous.

Constants: Specific gravity 0.9641; melting-point 65°C .; boiling-point 198.5°C . Soluble in alcohol and ether; slightly soluble in water.

Derivation: Obtained from croton oil, which is extracted from seeds of *Croton tiglium*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Titanic* (Titanic hydroxide, Acid meta-titanic) H_2TiO_3 .

Color and properties: White powder. Soluble in mineral acids and alkalis; insoluble in water.

Derivation: From hydrochloric acid solution of titanates by treating with ammonia and then drying over concentrated sulfuric acid.

Grades: Technical.

Containers: Wooden kegs.

Uses: Mordant.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Titanic, Anhydride. See Titanium oxides.

Acid Toluenemonosulfonic, Ortho- and Para-* $\text{C}_6\text{H}_4(\text{SO}_3\text{H})(\text{CH}_3)$

Soluble in alcohol and ether.

Derivation: By sulfonating toluol with concentrated sulfuric acid below 100°C .

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Toluic, Meta-* (Acid meta-toluylic) $\text{C}_6\text{H}_4\text{CH}_3\text{COOH}$.

Color and properties: White to yellowish crystals.

Constants: Specific gravity 1.0543; melting-point $108^{\circ}\text{--}109^{\circ}\text{C}$.; boiling-point 263°C .

Soluble in water, alcohol and ether.

Derivation: By oxidation of meta-xylol with nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Toluic, Ortho-* (Acid toluylic, Acid • methylphenylformic, Acid methylbenzoic) $\text{C}_6\text{H}_4\text{CH}_3\text{COOH}$.

Color and properties: White crystals. Constants: Specific gravity 1.0621; melting-point 104°C .; boiling-point 259°C . Soluble in water, alcohol and chloroform.

Derivation: By oxidizing ortho-xylol with dilute nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Toluic, Para-* (Acid para-toluylic) $\text{C}_6\text{H}_4\text{CH}_3\text{COOH}$.

Color and properties: Transparent crystals.

Constants: Melting-point 180°C .; boiling-point 275°C .

Soluble in water, alcohol and ether.

Derivation: By treating cymene or turpentine with nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Toluidine-meta-sulfonic, Ortho-*

$\text{C}_6\text{H}_3(\text{CH}_3)(\text{NH}_2)\text{SO}_3\text{H}$ 1:2:5.

Color and properties: Colorless crystals.

Soluble in hot water, alcohol and ether.

Derivation: By heating acid ortho-toluidine sulfate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Tribromoacetic* CBr_3COOH .

Color and properties: Colorless crystals.

Constants: Melting-point 135°C.; boiling-point 245°-250°C.

Derivation: By oxidizing bromal with nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles, kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Trichloroacetic. See Acid trichloroacetic.

Acid Trichloroacetic* (Acid trichloroacetic) CCl_3COOH .

Color and properties: Deliquescent, colorless crystals; pungent, suffocating odor; strongly caustic.

Constants: Specific gravity 1.6298; melting-point 57.3°C.; boiling-point 195°C.

Soluble in water, alcohol and ether.

Derivation: From glacial acetic acid by the action of chlorine in presence of sunlight, ultra-violet radiation or catalysts.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Tightly stoppered glass bottles.

Uses: Medicine; organic synthesis; reagent for detection of albumin; corn and wart removers.

Fire hazard: None.

Railroad shipping regulations: White label.

Acid Tricyanic. See Acid cyanuric.

Acid Trihydroxybenzoic. See Acid gallic.

Acid Trioxybenzoic. See Acid gallic.

Acid Tungstic* (Acid wolframic, Acid ortho-tungstic) $\text{W}_2\text{O}_5(\text{OH})_2$.

Color and properties: Yellow powder. Insoluble in water.

Derivation: Fusion of wolframite, scheelite or any other tungsten min-

eral with alkali and subsequent decomposition with sulfuric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Barrels; kegs.

Uses: Mordant; tungsten metal, wire, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Ureous. See Xanthine.

Acid Uric* (Acid lithic, Uric oxide)

$\text{CO}(\text{NH})_2\text{COC}_2\text{CO}(\text{NH})_2$.

Color and properties: White crystals.

Constants: Specific gravity 1.855-1.893; melting-point: Decomposes; boiling-point: Decomposes.

Soluble in hot concentrated sulfuric acid very slightly soluble in water; insoluble in alcohol and ether.

Derivation: From urine or bird excrement.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Acid Uvic. See Acid racemic.

Acid Valerianic. See Acid valeric, Iso.

Acid Valeric, Iso* (Acid pantoic, Primary, Acid valerianic, Acid valeric, Anhydrous, Acid valeric, Monohydrate, Isobutylcarbonyl) $(\text{CH}_3)_2\text{CH}.\text{CH}_2.\text{CO}_2\text{H}$.

Color and properties: Transparent, colorless, oily liquid; exceedingly disagreeable, rancid odor; bitter burning taste.

Constants: Specific gravity 0.95592; melting-point 38°C.; boiling-point 176.7°C.

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By oxidizing amyl alcohol with bichromate and sulfuric acid. (b) From root of *Valeriana officinalis* by distillation.

Grades: Technical; U. S. P.
Containers: Carboys; glass bottles.
Uses: Medicine; artificial fruit essences; perfumery.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Valeric, Normal* (Acid propylacetic, Normal) $\text{CH}_3(\text{CH}_2)_3\text{CO}_2\text{H}$.
Color and properties: Clear, colorless liquid; butyric acid odor.
Constants: Specific gravity 0.9415; melting-point -58.5°C ; boiling-point 186.4°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: Obtained synthetically from propylmalonic acid or butylcyanide.
Grades: Technical.
Containers: Carboys; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Vanadic (a) Meta- HVO_3 ; (b) Ortho- H_3VO_4 ; (c) Pyro- $\text{H}_4\text{V}_2\text{O}_7$. These acids have never been prepared and apparently do not exist in the pure state. Various investigators have claimed to be able to produce metavanadic acid and pyro-vanadic acid, but recent studies have proven that they only obtained various acid vanadates. The three acids above named, however, are represented in the various alkali and other metal vanadates. Ordinarily, when vanadic acid is mentioned, vanadium pentoxide (vanadic acid anhydride) is meant.

Acid Vanadic, Anhydride. See Vanadium pentoxide.

Acid, Vinegar. See Acid acetic.

Acid, White. A mixture of ammonium bifluoride and hydrofluoric acid used for etching glass.

Acidum Aceticum, U. S. P., B. P. See Acid acetic.

Acidum Aceticum Glaciale, U. S. P., B. P. See Acid acetic, Glacial.

Acidum Acetylsalicylicum, B. P. See Acid acetylsalicylic.

Acidum Arseniosum, B. P. See Arsenic trioxide.

Acidum Benzoicum, U. S. P., B. P. See Acid benzoic.

Acidum Boricum, U. S. P., B. P. See Acid boric.

Acidum Carbolicum, B. P. See Phenol.

Acidum Carbolicum Liquefactum, B. P. See Phenol (Liquefied carbolic acid).

Acidum Chromicum, B. P. See Acid chromic.

Acidum Citricum, U. S. P., B. P. See Acid citric.

Acidum Gallicum, U. S. P. See Acid gallic.

Acidum Hydriodicum Dilutum, U. S. P., B. P. See Acid hydriodic, Diluted.

Acidum Hydrobromicum Dilutum, U. S. P., B. P. See Acid hydrobromic, Diluted.

Acidum Hydrochloricum, U. S. P., B. P. See Acid hydrochloric.

Acidum Hydrocyanicum Dilutum, U. S. P., B. P. See Acid hydrocyanic, Diluted.

Acidum Hypophosphorosum, U. S. P. See Acid hypophosphorous.

Acidum Lacticum, U. S. P., B. P. See Acid lactic.

Acidum Nitricum, U. S. P., B. P. See Acid nitric.

Acidum Nitrohydrochloricum, U. S. P.
See Aqua regia.

Acidum Oleicum, U. S. P., B. P. See
Acid oleic.

Acidum Phosphoricum, U. S. P., B. P.
See Acid phosphoric.

Acidum Picricum, B. P. See Acid picric.

Acidum Salicylicum, U. S. P., B. P. See
Acid salicylic.

Acidum Stearicum, U. S. P. See Acid
stearic.

Acidum Sulphuricum, U. S. P., B. P. See
Acid sulfuric.

Acidum Sulphurosum, B. P. See Acid
sulfurous.

Acidum Tannicum, U. S. P., B. P. See
Acid tannic.

Acidum Tartaricum, U. S. P., B. P. See
Acid tartaric.

Acidum Trichloroaceticum, U. S. P. See
Acid trichloroacetic.

Acid Wolframic. See Acid tungstic.

Aconiti Radix, B. P. See Aconite.

Aconite* (Aconite root, Monkshood,
Wolfsbane, Friar's cowl, Mouse-
base).

Derivation: Dried tubers of *Aconitum*
nappellus.

Habitat: Mountainous regions of Eu-
rope, Asia and North America.

Grades: Technical; U. S. P.; B. P.

Containers: Burlap bags and boxes.

Uses: Pharmacy.

Fire hazard: None.

Railroad shipping regulations: None.

Aconitina, U. S. P., B. P. See Aconitine.

Aconitine* $C_{34}H_{47}NO_{11}$.

Color and properties: White crystalline
alkaloid; feeble bitter taste; intensely
poisonous.

Constants: Melting-point 195°C .

Soluble in alcohol and ether; very
slightly soluble in water.

Derivation: By extraction and crystal-
lization from the root of *Aconitum*
nappellus.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Salts obtained by interaction of the
acid and alkaloid:—

Hydrobromide

$C_{34}H_{47}NO_{11} \cdot \text{HBr} \cdot 2.5\text{H}_2\text{O}$

M. P. 163°C .

Soluble in water, alcohol and ether.

Hydrochloride

$C_{34}H_{47}NO_{11} \cdot \text{HCl} \cdot 3\text{H}_2\text{O}$.

Soluble in water and alcohol.

Nitrate

$C_{34}H_{47}NO_{11} \cdot \text{HNO}_3 \cdot 5.5\text{H}_2\text{O}$.

Soluble in water and alcohol.

Sulfate

$(C_{34}H_{47}NO_{11})_2 \cdot \text{H}_2\text{SO}_4$.

Soluble in water and alcohol.

Aconitum, U. S. P., B. P. See Aconite.

Acorn Sugar. See Quercitol.

Acrolein* (Propenal, Acrylic aldehyde,
Acraldehyde) CH_2CHCHO .

Color and properties: Colorless or yel-
lowish liquid; inflammable; disagree-
able choking odor; has a violent ac-
tion on the eyes; poisonous.

Constants: Specific gravity 0.84; boil-
ing-point 52°C .

Soluble in water, alcohol and ether.

Derivation: (a) By the oxidation of
allyl alcohol. (b) By the distillation
of fats. (c) By heating glycerine with
potassium bisulfate.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis; manufacture
of military poison gas.

Fire hazard: Dangerous.

- Railroad shipping regulations: Red label.
- Actae.** See *Cimicifuga*.
- Actinolite.** A light-green calcium-magnesium-iron amphibole, $3\text{Mg}(\text{Fe})\text{O} \cdot \text{CaO} \cdot 4\text{SiO}_2$. See *Asbestos*.
- Actol.** Silver lactate.
- Adamsite.*** A military poison gas developed and used by the U. S. Navy during the late war.
- Adeps, U. S. P., B. P.** Lard.
- Adeps Lanae, U. S. P., B. P.** See *Lanum*.
- Adeps Lanae Hydrosus, U. S. P., B. P.** See *Lanum*.
- Adipic Acid.** See *Acid adipic*.
- Adipinic Acid.** See *Acid adipic*.
- Adrenaline* (Adrenalinum, Epinephrin, Laeva-methylaminocatholcatechol)**
 $\text{C}_9\text{H}_{13}\text{NO}_3$.
 Color and properties: Light brown or nearly white, crystalline powder.
 Constants: Melting-point 205° - 212°C .
 Slightly soluble in water; insoluble in alcohol, ether and chloroform.
 Derivation: From the suprarenal glands of sheep and cattle.
 Grades: B. P.
 Containers: Glass bottles.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Adrenalinum, B. P.** See *Adrenalin*.
- Adurol.** A photographic developer, prepared by the action of bromine on hydroquinone.
- Aegerite.** See *Wurtzilite*.
- Aegirite.** A monoclinic pyroxene having the general composition, $\text{Na}_2\text{O} \cdot \text{Fe}_2\text{O}_3 \cdot 4\text{SiO}_2$. Vanadiferous aegirite near Libby, Mont., contains 4 per cent of V_2O_5 which replaces a part of the Fe_2O_3 . Montana.
- Aeonite.** See *Wurtzilite*.
- Aether, U. S. P., B. P.** See *Ether*.
- Aether Aceticus, B. P.** See *Ethyl acetate*.
- Aether Purificatus, B. P.** See *Ether*.
- Aethylis Carbamas, U. S. P., B. P.** See *Ethyl carbamate*.
- Aethylis Chloridum, U. S. P., B. P.** See *Ethyl chloride*.
- African Saffron.** See *Carthamus*.
- Agalmatolite.** See *Pyrophyllite*. California, North Carolina.
- Agar.** See *Agar-Agar*.
- Agar-Agar (Japanese gelatine Japan agar, Japan, Bengal, Ceylon, or Chinese isinglass or gelatine, Laya carang; sometimes called Vegetable glue).** Thallus of various species of *Gelidium* and *Eucheuma*, Rhodophyceae (Algae) and *Sphaero coccus*.
 Habitat: Pacific and Indian Oceans; Japan sea.
 Long transparent strips resembling goose-quill pith.
 Grades: Technical; U. S. P.
 Containers: Bags.
 Uses: Medicine; sizing for silk; adhesives; foodstuffs; substitute for gelatin; nutrient in bacteriology.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Agate.** A variegated chalcedony, SiO_2 . Arkansas, California, Colorado, Con-

necticut, Michigan, Montana, Nebraska, New Jersey, North Carolina, Rhode Island, Texas and Wyoming.

Agnin. See Lanum.

Agnolin. See Lanum.

Agropyrum, B. P. See Triticum, page 510.

Ague Tree. See Sassafras bark.

Ajava Oil. See Ajowan oil.

Ajowan Oil (Ajawa oil)

Color and properties: Yellow liquid.

Has a very strong odor of thymol, as it contains between 45 and 55 per cent of this phenol. Also contains a considerable amount of cymene.

Specific gravity: 0.900 to 0.930.

Optical rotation: +1.0 to +1.5.

Derivation: By expression of the seeds of *Carum ajowan*.

Grades: Technical.

Containers: Tins; iron drums.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Albahaca Oil. See Tolu oil.

Alabandite. Natural manganese sulfide, MnS . Colorado.

Alabaster. Natural compact fine-grained gypsum, white or delicately shaded. See Gypsum.

Arizona, California.

Alant Acid Anhydride. See Helenin.

Alant Starch. See Inulin.

Alantolactone. See Helenin.

Alapurin. See Lanum.

Albertite. A natural, jet-black, pitch-like, brittle hydrocarbon with conchoidal fracture, differing from ordinary asphalt in being only partly (about 30 per cent) soluble in turpentine and in very imperfect fusion when heated. Specific gravity about 1.1. On destructive distillation yields mineral oil and coke.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Albite (Soda feldspar). A natural silicate of aluminum and sodium, $Na_2O.Al_2O_3.6SiO_2$. See Feldspar.

Albolene. See Petrolatum, Liquid.

Albumen. See Albumin.

Albumin, Blood.*

Derivation: Ox-blood is allowed to coagulate and the serum separated by centrifuging. The decanted liquor is filtered, decolorized and subsequently evaporated.

Grades: Technical.

Containers: Wooden barrels.

Uses: Photographic papers; textile printing; clarifying agent; leather industry.

Fire hazard: None.

Railroad shipping regulations: None.

Albumin, Egg.* Fresh white separated from the yolk, diluted with water, beaten to froth and subsequently filtered and evaporated.

Grades: Technical.

Containers: Wooden kegs.

Uses: Leather industry; foodstuffs; clarifying agent; photography.

Fire hazard: None.

Railroad shipping regulations: None.

Albumin, Milk.* Casein is coagulated from milk by rennet or by dilute acids, filtered and dried.

Grades: Technical.

Containers: Wooden kegs.

Uses: Adhesives; varnishes; ivory substitutes.

Fire hazard: None.

Railroad shipping regulations: None.

- Alcohol, Absolute. See Ethyl alcohol.
- Alcohol, Acetone. See Methyl, alcohol.
- Alcohol, Allyl. See Allyl alcohol.
- Alcohol, Amyl. See Amyl alcohol.
- Alcohol, Benzyl. See Benzyl alcohol.
- Alcohol, Bornyl. See Borneol.
- Alcohol, Butyl. See Butyl alcohol.
- Alcohol, Butyric. See Butyl alcohol.
- Alcohol, Caprylic. See Caprylic alcohol.
- Alcohol, Cetyl. See Cetyl alcohol.
- Alcohol, Cinnamyl. See Cinnamyl alcohol.
- Alcohol Dehydratum, U. S. P., B. P. See Ethyl alcohol, Absolute.
- Alcohol, Denatured. See Ethyl alcohol.
- Alcohol, Ethyl. See Ethyl alcohol.
- Alcohol, Ethylene. See Glycol.
- Alcohol, Ethylic. See Ethyl alcohol.
- Alcohol, Glycyl. See Glycerine.
- Alcohol, Grain. See Ethyl alcohol.
- Alcohol, Hecdecatic. See Cetyl alcohol.
- Alcohol, Heptylic. See Heptyl alcohol.
- Alcohol, Hexadecyl. See Cetyl alcohol.
- Alcohol, Isobutyl. See Isobutyl alcohol.
- Alcohol, Isopentyl. See Amyl alcohol.
- Alcohol, Isopropyl. See Isopropyl alcohol.
- Alcohol, Methyl. See Methyl alcohol.
- Alcohol, Octoic. See Caprylic alcohol.
- Alcohol, Octylic, Secondary. See Caprylic alcohol.
- Alcohol, Palmityl. See Cetyl alcohol.
- Alcohol, Phenylallylic. See Cinnamyl alcohol.
- Alcohol, Phenylethyl. See Phenylethyl alcohol, page 507.
- Alcohol, Propenyl. See Glycerine.
- Alcohol, Propyl. See Propyl alcohol.
- Alcohol, Pseudobutyl. See Butyl alcohol, Tertiary.
- Alcohol, Pseudopropyl. See Isopropyl alcohol.
- Alcohol, Styrylic. See Cinnamyl alcohol.
- Alcohol, Tertiary Tributyl. See Chlore-tone, page 504.
- Alcohol, Wood. See Methyl alcohol.
- Aldehyde, Acetic. See Acetaldehyde.
- Aldehyde, Anisic. See Anisic aldehyde.
- Aldehyde, Caprylic. See Caprylic aldehyde.
- Aldehyde, Cinnamic. See Cinnamic aldehyde.
- Aldehyde, Cinnamyl. See Cinnamic aldehyde.

- Aldehyde, Furfur.** See Furfural.
- Aldehyde, Furfuranecarboxylic.** See Furfural.
- Aldehyde, Heptoic.** See Oenanthol.
- Aldehyde, Isobutyl.** See Isobutyl aldehyde.
- Aldehyde, Isobutyryl.** See Isobutyl aldehyde.
- Aldehyde, Isovaleric.** See Isovaleric aldehyde.
- Aldehyde, Oenanthic.** See Oenanthol.
- Aldehyde, Oxybutyric.** See Aldol.
- Aldehyde, Propionic.** See Propyl aldehyde.
- Aldehyde, Propylic.** See Propyl aldehyde.
- Aldehyde, Pyromucic.** See Furfural.
- Aldehyde, Salicylic.** See Acid salicylicous.
- Aldehyde, Valeric, Iso.** See Isovaleric aldehyde.
- Alder Buckthorn (European).** See Frangula.
- Aldol* (Oxybutyric aldehyde)**
 $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{COH}$.
 Color and properties: Thick, colorless, odorless liquid.
 Constants: Boiling-point 90 to 105°C.; decomposed at 135°C.
 Miscible with water and alcohol.
 Derivation: Condensation of aldehyde with cold hydrochloric acid.
 Grades: Technical.
 Containers: Glass bottles; tin cans.
 Uses: Medicine and organic research.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Aletris (Star grass; Starwort; Blazing star; Colic root).**
 Derivation: Rhizome of *Aletris farinosa*.
 Habitat: Ontario.
 Grades: Technical.
 Containers: Bags.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Algarobilla.**
 Derivation: The pods of *Cæsalpinia brevifolia*. The pods contain 45 per cent tannin.
 Habitat: South America.
 Grades: Based on tannin content.
 Containers: Bags.
 Uses: Tanning extracts.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Algaroth Powder.** See Antimony oxychloride.
- Alite.** One of the four fundamental constituents of cement.
- Alizarin* (Dioxyanthraquinone)**
 $\text{C}_6\text{H}_4(\text{CO})_2\text{C}_6\text{H}_2(\text{OH})_2$.
 Color and properties: Yellow crystals.
 Constants: Melting-point 289°C.; boiling-point 430°C.
 Soluble in alcohol and ether; sparingly soluble in water.
 Derivation: Anthracene is oxidized to anthraquinone, the sulfonic acid of which is then fused with caustic soda and potassium chlorate, the melt is run into hot water and the alizarin precipitated with hydrochloric acid.
 Grades: Technical.
 Containers: Wooden barrels; kegs.
 Uses: Manufacture of dyestuffs; production of lakes.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Alkanet.** See Alkanna.
- Alkanna (Alkanet, Orcanette anchusa);**
 Derivation: Root of *Alkanna (Anchusa) tinctoria*.

Habitat: Mediterranean region, Hungary and Western Asia.
Grades: Technical.
Containers: Bags.
Uses: Coloring oils red.
Fire hazard: None.
Railroad shipping regulations: None.

Allanite (Orthite) A natural complex variable silicate of aluminum, iron, the cerium metals (cerium, didymium, lanthanum), and in smaller quantity those of the yttrium group. New York, North Carolina, Texas, Virginia and Wyoming.

Allophanamide. See Biuret.

Allspice. See Pimenta, page 507.

Allspice Oil* (Oil of pimenta).

Color and properties: A colorless or pale-yellow liquid, becoming darker and thicker with age and exposure to the air; strong, aromatic, clove-like odor; pungent and spicy taste. Contains eugenol.

Constants: Specific gravity 1.018 to 1.048; refractive index 1.5309-1.5303. Optical rotation: -1 to -5.

Soluble in alcohol, ether, carbon bisulfide and glacial acetic acid.

Derivation: Distilled from pimenta, the nearly ripe fruit of *Pimenta officinalis*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; tins; glass bottles.

Uses: Medicine; flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Allyl Alcohol* $\text{CH}_2\text{CHCH}_2\text{OH}$.

Color and properties: Limpid liquid; pungent odor; violent effect on eyes; poisonous.

Constants: Specific gravity 0.8491; melting-point -129°C ; boiling-point 96.69°C .

Soluble in alcohol, ether; insoluble in water.

Derivation: By heating glycerol, oxalic

acid and ammonium chloride. Product recovered by distillation.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Glass bottles; iron drums.

Uses: Medicine; organic synthesis; military poison gas.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Allyl Isothiocyanate. See Mustard oil, Artificial.

Allyl Mustard Oil. See Mustard oil, Artificial.

Allylpyrocatecholmethylene Ester. See Saffrole.

Almond, Bitter.

Derivation: Ripe seed of *Prunus amygdalus* (*Amygdalus communis*).

Habitat: Italy, Spain and Southern France.

Grades: Technical; U. S. P.

Containers: Barrels; burlap bags.

Uses: Preparation of amygdalin; recovery of the essential oil; flavoring compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Almond Meal.*

Derivation: Residue obtained after expressing oil from almonds.

Grades: Technical.

Containers: Tins.

Uses: Cosmetics; manufacturing bitter almond water; perfume base; cooking; confectionery.

Fire hazard: None.

Railroad shipping regulations: None.

Almond Oil, Artificial. See Benzaldehyde.

Almond Oil, Bitter.*

Color and properties: Yellowish, highly refracting liquid; aromatic odor; bitter, acrid, burning taste.

Constants: Specific gravity 1.045-1.060; boiling-point 180°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By maceration of the seeds of *Amygdalus communis* with water and subsequent distillation.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Iron drums; tins; glass bottles.

Uses: Medicine; flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Almond Oil, Bitter, Artificial. See Nitrobenzene.

Almond Oil, Sweet.*

Color and properties: Yellowish liquid; aromatic odor.

Constants: Specific gravity 0.915-0.920.

Soluble in alcohol, ether, chloroform and benzol; insoluble in water.

Derivation: Expressed from the seed of *Amygdalus communis*.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Iron drums; tins; glass bottles.

Uses: Perfumes; lubricant for delicate mechanisms; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Aloes, Barbadoes (Curacao aloes.)

Derivation: Inspissated juice of leaves of *Aloes vulgaris* and other species.

Habitat: West Indies (Barbadoes and Jamaica).

Color and properties: Orange-brown to blackish-brown, opaque, resinlike masses; saffron-like odor; strongly bitter taste.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Aloes, Cape.

Derivation: Inspissated juice from leaves of various species of aloes, chiefly *Aloe ferrox*, *Aloe africana*, and *Aloe spicata*.

Habitat: Cape of Good Hope, Africa.

Grades: Technical.

Containers: Bags.

Uses: Medicine; dyeing; manufacturing brown dye.

Fire hazard: None.

Railroad shipping regulations: None.

Aloes, Hepatic (Curacao).

Derivation: Inspissated juice of leaves of *Aloe vulgaris*, *Aloe chinensis* and other species.

Habitat: Dutch West Indies.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Aloes, Socotrine.

Derivation: Inspissated juice of leaves of *Aloe perryi* and other species.

Habitat: Island of Socotra.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Aloin (Barbaloin) $C_{17}H_{18}O_7 \cdot \frac{1}{2}H_2O$.

Color and properties: Yellow crystals; bitter taste.

Soluble in alkalis and formamide; slightly soluble in water and in alcohol.

Derivation: From Barbadoes aloes.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Aloinum, U. S. P., B. P. See Aloin.

Aloxite* (Aluminum oxide) Al_2O_3 .

Color and properties: White to dark wine colored, very tough and dense crystalline masses of artificial aluminum oxide.

Constants: Specific gravity 3.9-4.0.

Derivation: Prepared by fusion of bauxite in an electric furnace.

Grades: Grains, from 8 mesh to finest powders.

Containers: Kegs.

Uses: Chemical apparatus; abrasives; refractories; grinding wheels; filters.

- Fire hazard: None.
Railroad shipping regulations: None.
- Alpha-Bromoanthracene.** See Dibromoanthracene.
- Alpha-Dibromoanthracene.** See Dibromoanthracene.
- Alpha-Dichloroethane.** See Ethylene chloride.
- Alpha-Dimethylglyoxime.** See Dimethylglyoxime.
- Alpha-Dinitrophenol.** See Dinitrophenol.
- Alpha-Diphenylenemethane.** See Fluorene.
- Alpha-Hydroxypropionic Acid.** See Acid lactic.
- Alpha-Monobromonaphthalene.** See Monobromonaphthalene, Alpha-.
- Alpha-Monobromopropionic Acid.** See Acid monobromopropionic.
- Alpha-Mononitronaphthalene.** See Nitronaphthalene, Alpha-.
- Alpha-Naphthol.** See Naphthol, Alpha-.
- Alpha-Naphtholsulfonic Acid.** See Acid alpha-naphtholsulfonic.
- Alpha-Naphthylamine.** See Naphthylamine, Alpha-.
- Alpha-Naphthylamine, Hydrochloride.** See Naphthylamine, Hydrochloride, Alpha-.
- Alpha-Naphthylaminesulfonic Acid.** See Acid alpha-naphthylaminesulfonic.
- Alpha-Nitronaphthalene.** See Nitronaphthalene, Alpha-.
- Alpha-Phenylnaphthylamine.** See Phenylnaphthylamine, Alpha-.
- Alpha-Propenyldichlorohydrin.** See Dichlorohydrin, Alpha-.
- Alpha-Terpineol.** See Terpineol.
- Alpha-Toluic Acid.** See Acid phenylacetic.
- Altaite.** A natural lead telluride.
Pb. Te. Colorado.
- Althea* (Marshmallow).**
Derivation: Dried root flowers and leaves of *Althaea officinalis* from plants of second year's growth and deprived of periderm.
Habitat. Europe, Western and Northern Asia; native in Eastern U. S.
Grades: Technical; U. S. P.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.
- Alum.** See Aluminum-potassium sulfate; aluminum-sodium sulfate, etc. The term alum strictly refers to double sulfates of aluminum and another metal, but is commonly incorrectly used by paper-makers, tanners, etc., to refer to various grades of aluminum sulfate.
- Alum, Ammonia.** See Aluminum-ammonium sulfate.
- Alum, Burnt.** See Aluminum-potassium sulfate, Calcined.
- Alum, Chrome.** See Chromium-potassium sulfate.
- Alum, Extra Concentrated.** Alum containing 22 per cent of aluminum.
- Alum, Pearl.** Specially prepared aluminum sulfate for the paper making industry.
- Alum, Pickle.** Aluminum sulfate prepared to meet specifications of packers and preservers.
- Alum, Porous.** See Sodium-aluminum sulfate.

Alum, Potash. See Aluminum-potassium sulfate.

Alum, Roman. Aluminum salts containing insoluble iron salts made at Tolfar, Italy.

Alum Root. See Geranium.

Alum, Sodium. See Aluminum-sodium-sulfate.

Alumen, U. S. P., B. P. See Aluminum-potassium sulfate.

Alumen Purificatum, B. P. See Aluminum-potassium sulfate.

Aluminium. See Aluminum.

Aluminum* (Aluminium) Al.
Color and properties: Silvery, ductile metal.

Constants: Specific gravity 2.708; melting-point 657°C.

Soluble in acids and alkalis; insoluble in water.

Derivation: By the electrolysis of the oxide in a bath of molten cryolite (a naturally occurring fluoride of sodium and aluminum).

Grades: Ingot; sheet; dust; foil; flake.

Containers: Boxes; kegs; barrels; etc.

Uses: Electrical conductors; alloys; manufacture of steel; metallurgy; aluminothermic welding; household utensils; chemical equipment especially for handling acetic acid, oils, etc.; aluminum salts; photographic flash powders; coins. Granulated aluminum is used for reduction of ferro-vanadium, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Acetate*

(a) normal $\text{Al}(\text{C}_2\text{H}_3\text{O}_2)_3$;

(b) basic $\text{Al}(\text{C}_2\text{H}_3\text{O}_2)_2\text{OH}$.

Color and properties: Amorphous, white powder.

Soluble in water.

Derivation: By the interaction of metallic aluminum or aluminum hyd-

roxide and acetic acid. The product is recovered by crystallization.

Method of purification: Recrystallization.

Grades: Technical; also sold in solution.

Containers: Wooden barrels; boxes; drums; carboys (solutions).

Uses: Waterproofing cloth; mordant in textile dyeing; preparation of lakes; embalming fluids; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum-Ammonium Sulfate* (Ammonia alum)

$\text{Al}_2(\text{SO}_4)_3(\text{NH}_4)_2\text{SO}_4 \cdot 24\text{H}_2\text{O}$.

Color and properties: Colorless crystals.

Constants: Specific gravity 1.645; melting-point 94.5°C.

Soluble in water; insoluble in alcohol.

Derivation: By crystallization from a mixture of ammonium and aluminum sulfates.

Method of purification: Recrystallization.

Grades: Technical; lump, ground powdered.

Containers: Barrels.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Borate*, $2\text{Al}_2\text{O}_3 \cdot \text{B}_2\text{O}_3 \cdot \text{H}_2\text{O}$.

Color and properties: White, granular powder.

Soluble in water; insoluble in alcohol and ether.

Derivation: By the interaction of aluminum hydroxide and boric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Glass and ceramic industries.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Bromide* $\text{Al}_2\text{Br}_6 \cdot 12\text{H}_2\text{O}$.

Color and properties: White to yellowish, deliquescent crystals.

Constants: Melting-point 93°C.

Soluble in water, alcohol and carbon bisulfide.

Derivation: By passing bromine over heated aluminum.

Method of purification: Crystallization.

Grades: Technical.

Containers: Air-tight drums; sealed glass vials.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Carbide* Al_4C_3 .

Color and properties: Greenish-gray, pulverized mass; decomposes in water with liberation of methane.

Constants: Specific gravity 2.36.

Derivation: By heating aluminum oxide and coke in an electric furnace.

Grades: Technical.

Containers: Iron drums.

Uses: Generating methane.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Aluminum Chloride* (a) Al_2Cl_6 ;

(b) $\text{Al}_2\text{Cl}_6 \cdot 12\text{H}_2\text{O}$.

Color and properties: Yellowish-white, granular crystals; sublimes readily.

Constants: Melting-point 190°C .

Soluble in water, ether and alcohol.

Derivation: (a) By treating aluminum with hydrochloric acid. (b) By heating alumina and carbon in presence of chlorine. The product is recovered by sublimation.

Impurities: Ferric chloride; basic aluminum chloride.

Grades: Technical anhydrous; technical crystals; crystalline hydrated; C. P. crystals.

Containers: Air-tight drums; sealed glass vials.

Uses: Catalytic agent; petroleum refining; Friedel and Crafts' reaction in organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Fluoride* $\text{Al}_2\text{F}_6 \cdot 7\text{H}_2\text{O}$.

Color and properties: White crystalline powder.

Soluble in water.

Derivation: Action of hydrofluoric acid on aluminum hydroxide and subsequent recovery by crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Barrels.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Hydrate. See Aluminum hydroxide.

Aluminum Hydroxide* (Hydrated alumina; Precipitated oxide of aluminum) $\text{Al}_2\text{O}_3 \cdot \text{XH}_2\text{O}$.

Color and properties: White, amorphous powder.

Constants: Variable with the composition, i. e., with the number of molecules of water of crystallization.

Soluble in acid; insoluble in water.

Derivation: By fusing bauxite a naturally occurring hydrated oxide of aluminum with soda ash. The melt (sodium aluminate) is dissociated with hot water and the aluminum hydroxide is precipitated by passing in a stream of carbon dioxide.

Grades: Technical; U. S. P.

Containers: Barrels; tanks.

Uses: Mordant for dyeing; manufacture of colors and lakes; filtering material.

Fire hazard: None.

Railroad shipping regulations: None

Aluminum Iodide* AlI_3 .

Color and properties: Brown, crystalline pieces.

Constants: Melting-point 185°C .; boiling-point 360°C .

Soluble in water.

Derivation: By heating aluminum oxide and iodine in a sealed tube.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron canisters.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Nitrate*

(a) $\text{Al}(\text{NO}_3)_3$; (b) $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$;

(c) $\text{Al}(\text{NO}_3)_3 \cdot 18\text{H}_2\text{O}$.

Color and properties: White crystals.

Constants: (b) Melting-point 73°C .; boiling-point: Decomposes at 134°C . Soluble in cold water; decomposes in hot water.

Derivation: Formed by the action of nitric acid on aluminum and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Textiles; leather.

Fire hazard: None.

Railroad shipping regulations: Yellow label.

Aluminum Oleate* $\text{Al}(\text{C}_{18}\text{H}_{35}\text{O}_2)_3$.

Color and properties: Yellowish-white mass.

Insoluble in water.

Derivation: By heating aluminum hydroxide, water and oleic acid. The resultant mixture is filtered and dried.

Grades: Technical.

Containers: Barrels.

Uses: Waterproofing; dryer for paints, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Oxide* (Alumina) Al_2O_3 .

Color and properties: White powder.

Constants: Specific gravity 3.73; melting-point 2020°C .

Soluble in concentrated sulfuric acid; insoluble in water.

Derivation: By calcining aluminum hydroxide.

Grades: Technical.

Containers: Wooden barrels.

Uses: Aluminum metal; abrasives; laboratory crucibles; refractory tubes, etc.

Fire hazard: None.

Railroad shipping regulations: None.

See also Aloxite, Alundum, Borolon, Corundum, and Ruby.

Aluminum Palmitate* $\text{Al}(\text{C}_{15}\text{H}_{31}\text{O}_2)_3$.

Color and properties: Yellowish-white mass.

Insoluble in water.

Derivation: By heating aluminum hydroxide and palmitic acid and water. The resultant mixture is filtered and dried.

Grades: Technical.

Containers: Wooden barrels.

Uses: Waterproofing; lubricating oils.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Phosphate* AlPO_4 .

Color and properties: White crystals.

Constants: Specific gravity 2.54.

Insoluble in water and alcohol.

Derivation: By the interaction of solutions of aluminum sulfate and sodium phosphate.

Grades: Technical.

Containers: Wooden barrels.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum-Potassium Sulfate* (Potash alum) $\text{Al}_2(\text{SO}_4)_3\text{K}_2\text{SO}_4\cdot 24\text{H}_2\text{O}$.

Color and properties: White crystals.

Constants: Specific gravity 1.7571; melting-point 105°C .

Soluble in water; insoluble in alcohol.

Derivation: Alunite (K.Na) (Al_2OH) .

$(\text{SO}_4)_2$ is roasted in reverberatory furnaces. The melt is leached and the salt recovered by crystallization.

Method of purification: Recrystallization.

Grades: Technical; lump; ground; powdered; U. S. P.; B. P.

Containers: Barrels.

Uses: Medicine; textiles; paper.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Resinate* $\text{Al}(\text{C}_{44}\text{H}_{63}\text{O}_5)_3$.

Color and properties: Brown mass.

Insoluble in water.

Derivation: By heating of aluminum hydroxide and rosin.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dryer for varnishes.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Aluminum Rhodanide. See Aluminum sulfocyanate.

Aluminum Silicate. See Kaolin.

Aluminum-Sodium Sulfate* (Soda alum)
 $\text{Al}_2\text{Na}_2(\text{SO}_4)_4 \cdot 24\text{H}_2\text{O}$.

Color and properties: Colorless transparent crystals.

Constants: Specific gravity 1.675; melting-point 61°C .

Soluble in water; insoluble in alcohol.

Derivation: By treating aluminum sulfate with sodium sulfate and crystallizing.

Method of purification: Recrystallization.

Grades: Technical; lump; ground; powdered; C. P.

Containers: Wooden barrels.

Uses: Textile industry; mordant; paper industry; dry color industry; water purification.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Stearate* $\text{Al}(\text{C}_{18}\text{H}_{35}\text{O}_2)_3$.

Color and properties: Yellowish mass. Insoluble in water.

Derivation: By heating aluminum acetate and sodium stearate together. The product is filtered and dried.

Grades: Technical.

Containers: Wooden barrels.

Uses: Waterproofing; dryer; lubricating oils; cutting compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Sulfate* (sometimes erroneously called alum) (a) $\text{Al}_2(\text{SO}_4)_3$; (b) $\text{Al}_2(\text{SO}_4)_3 \cdot 18\text{H}_2\text{O}$.

Color and properties: White crystals.

| Constants | (a) | (b) |
|------------------|----------------------------------|------------|
| Specific Gravity | 2.71 | 1.62 |
| Melting-point | Decomposes at 77°C | Decomposes |

Soluble in water; insoluble in alcohol.

Derivation: By treating pure kaolin or aluminum hydroxide with sulfuric acid. The insoluble silicic acid is removed by filtration and the sulfate is obtained by crystallization.

Grades: Iron-free; technical; U. S. P.

Containers: Wooden barrels; burlap bags.

Uses: Tannage of white leather; sizing paper; lakes; alums; mordant for dyeing; water purification (chiefly the anhydrous salt).

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Sulfocyanate* (Aluminum sulfocyanide, Aluminum rhodanide)
 $\text{Al}(\text{SCN})_3$.

Color and properties: Yellowish powder.

Soluble in water; insoluble in alcohol and ether.

Derivation: Aluminum cyanide is boiled with sulfur.

Method of purification: Crystallization. Grades: Technical.

Containers: Iron drums.

Uses: Textile industry.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Sulfocyanide. See Aluminum sulfocyanate.**Aluminum Tannate.***

Color and properties: Light brown powder.

Derivation: By the interaction of aluminum acetate and tannic acid.

Grades: Technical.

Containers: Tins.

Uses: Medicine; antiseptic.

Fire hazard: None.

Railroad shipping regulations: None.

Aluminum Trihydrate. See Aluminum hydroxide.**Alundum*** (Aluminum oxide) Al_2O_3 .

Color and properties: White to dark wine colored, very tough and dense crystalline masses.

Constants: Specific gravity 3.9-4.0.

Derivation: Prepared by fusion of bauxite in an electric furnace.

Grades: Grains, from 8 mesh to finest powders.

Containers: Kegs.

Uses: Chemical apparatus; abrasives; refractories; grinding wheels; filters.

Fire hazard: None.

Railroad shipping regulations: None.

Alunite. A natural hydrous sulfate of aluminum and potassium,
 $\text{K}_2\text{O}_3 \cdot \text{Al}_2\text{O}_3 \cdot 4\text{SO}_3 \cdot 6\text{H}_2\text{O}$.

It is white or gray in color with a vitreous luster and contains 11.4 per cent potash, K_2O ; specific gravity 2.83; hardness 3.5-4. California, Colorado, Nevada and Utah.

Alunogen. A natural hydrous aluminum sulfate, $Al_2O_3 \cdot 3SO_3 \cdot 18H_2O$. New Mexico.

Alva Marina

Derivation: A prepared seaweed.

Grades: Technical.

Containers: Large bags.

Uses: By upholsterers for stuffing chairs, sofas and mattresses.

Fire hazard: None.

Railroad shipping regulations: None.

Amalgam.* An alloy of mercury with one or more metals. More specifically a native compound of silver and mercury, in which the percentage of silver ranges from 27.5 to 95.8. Native gold amalgam carrying 39 to 42.6 per cent gold has also been found in California and Colorado.

Amaranth. A coal-tar dyestuff giving a deep red shade.

Ambergria.

Derivation: Morbid concretion from the intestinal tract of the sperm whale.

Color and properties: Irregular, gray, grayish-brown or black, streaked or mottled, waxy, opaque masses; peculiar odor.

Grades: Technical.

Containers: Wooden boxes.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Amber Oil.*

Color and properties: Brown, thin, liquid, volatile oil; darkens with age; empyreumatic, balsamic odor.

Chief constituents: Phenols.

Constants: Specific gravity 0.915-0.975.

Soluble in alcohol.

Derivation: From amber, the fossil resin from *Pinus succinifer* and other

extinct coniferæ, by destructive distillation and redistillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; pharmacy.

Fire hazard: None.

Railroad shipping regulations: None.

Amber Seed. See *Abelmoschus*.

Amblygonite. A natural fluophosphate of aluminum and lithium, $Li(AlF)PO_4$. California and South Dakota.

Ambrette. See *Abelmoschus*.

American Ginseng. See *Ginseng*.

American Hellebore. See *Veratrum*.

American Ipecac. See *Gillenia*.

American Saffron. See *Carthamus*.

American Valerian. See *Cypripedium*.

American Veratrum. See *Veratrum*.

American Wormseed Oil. See *Chenopodium* oil.

Amianthus. See *Asbestos*.

Amides. See *Amines*.

Amido. See *Amino*.

Amidol. Trade name for diaminophenol; a photographic developer.

Amidopyrine. See *Pyramidon*.

Aminoacetanilide, Para*

$NH_2C_6H_4NHOCCH_3$.

Color and properties: Colorless crystals.

Constants: Melting-point 162°C .
Soluble in water, alcohol and ether.
Derivation: Acetylation of para-phenylenediamine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Aminoacetic Acid. See Acid aminoacetic.

Aminoanthraquinone* $\text{C}_{14}\text{H}_9\text{O}_2\text{NH}_2$.
(a) 1-Amino; (b) 2-Amino.
Color and properties: (a) Red, iridescent needles.
(b) Red or orange-brown needles.
Constants: Melting-point: (a) 256°C .; (b) 302°C .; boiling-point, sublimes.
Slightly soluble in alcohol; soluble in chloroform, benzol and acetone.
Derivation: By reduction of nitroanthraquinones, or by substituting the amino radicle direct in nitro-, halogen- or oxyanthraquinones.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden barrels.
Uses: (a) For manufacture of dyestuffs (cyanathrol and alizarin blue, etc.).
(b) For manufacture of dyestuffs (indanthrene and flavanthrene, etc.).
Fire hazard: None.
Railroad shipping regulations: None.
See also Diaminoanthraquinones.

Aminoazobenzene* $\text{NH}_2\text{C}_6\text{H}_4\text{N}_2\text{C}_6\text{H}_5$.
Color and properties: Yellow crystals.
Constants: Melting-point 127.4°C .; boiling-point: Below 360°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: Diazoaminobenzene when heated with aniline hydrochloride, yields aminoazobenzene. The aniline hydrochloride acts as a catalyzer and does not enter into the reaction.
Method of purification: Crystallization.
Grades: Technical.
Containers: Barrels; kegs.
Uses: Dyestuffs (chrysoidines).
Fire hazard: None.
Railroad shipping regulations: None.

Aminoazobenzene-beta-naphthol* (Sudan Red III)
 $\text{C}_6\text{H}_5\text{NNC}_6\text{H}_4\text{NNC}_{10}\text{H}_7\text{OH}$.
Color and properties: Brown powder.
Insoluble in water; soluble in alcohol.
Derivation: By heating aminoazobenzene and beta-naphthol.
Method of purification: Crystallization from alcohol.
Grades: Technical.
Containers; Tins; glass bottles.
Uses: Coloring oils red.
Fire hazard: None.
Railroad shipping regulations: None.

Aminoazobenzene Hydrochloride*
 $\text{NH}_2\text{C}_6\text{H}_4\text{N}_2\text{C}_6\text{H}_5\text{HCl}$.
Color and properties: Steel-blue crystals.
Soluble in alcohol; slightly soluble in water.
Derivation: By passing dry hydrochloric acid gas into a solution of aminoazobenzene.
Method of purification: Crystallization.
Grades: Technical.
Containers: Barrels; kegs.
Uses: Dyestuffs; coloring lacquers.
Fire hazard: None.
Railroad shipping regulations: None.

Aminoazotoluene Hydrochloride*
 $(\text{CH}_3\text{C}_6\text{H}_4)_2\text{N}_2\text{HCl}$.
Color and properties: White crystals.
Soluble in water, alcohol and ether.
Derivation: By the interaction of aminoazotoluol and dry hydrochloric acid gas.
Method of purification: Crystallization.
Grades: Technical.
Containers: Barrels; kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Aminobenzene. See Aniline.

Aminobenzenesulfonic Acid. See Acid sulfanilic, Meta-.

Aminobenzenesulfonic Acid, Para-. See Acid sulfanilic, Para-, page 503.

Aminobenzoic Acid, Meta-. See Acid aminobenzoic, Meta-.

Aminobenzenyl-ortho-aminothiocresol.
See Dehydrothio-para-toluidine.

Aminodimethylaniline, Para-* (Dimethyl-para-phenylenediamine)
 $C_6H_4NH_2N(CH_3)_2$.

Color and properties: Colorless, asbestos-like, long needles; stable in air when pure. If impure, the crystals liquefy.

Constants: Melting-point $41^\circ C$; boiling-point $257^\circ C$.

Soluble in water, alcohol and benzol.

Derivation: By reduction of para-nitrosodimethylaniline with zinc dust and hydrochloric acid. The aminodimethylaniline is not isolated, but the solution is worked up.

Method of purification: Recrystallization from mixture of benzol and ligroin.

Grades: Technical.

Containers: Kegs.

Uses: Base for production of methylene blue; photo developer; reagent for detection of hydrogen sulfide.

Fire hazard: None.

Railroad shipping regulations: None.

Aminodimethylbenzene. See Xylidine

Aminodracrylic Acid. See Acid para-aminobenzoic.

Aminoethanoic Acid. See Acid aminoacetic.

Aminoform. See Hexamethylenetetramine.

Amino-Mercuric Chloride. See Mercuric-ammonium chloride.

Amino-meta-xylene. See Xylidine, Meta.

Aminonaphtholdisulfonic Acid. See Acid aminonaphtholdisulfonic.

Aminonaphtholsulfonic Acid. See Acid aminonaphtholsulfonic.

Amino-para-xylene. See Xylidine, Para-.

Aminophenol*

(a) Ortho $C_6H_4(NH_2)(OH)$ 1.2.

(b) Meta $C_6H_4(NH_2)(OH)$ 1.3.

(c) Para $C_6H_4(NH_2)(OH)$ 1.4.

Color and properties: White crystals.

Constants: Melting-point (a) $170^\circ C$; (b) $122^\circ C$; (c) $184^\circ C$.

Soluble in water, alcohol and ether.

Derivation: (a) By reduction of ortho-nitrophenol mixed with aqueous ammonia by means of a stream of hydrogen sulfide.

(b) Fusion of meta-sulfanilic acid with caustic soda and subsequent extraction of the melt with ether.

(c) (1) By reduction of para-nitrophenol with iron. (2) By electrolytic reduction of nitrobenzene in sulfuric acid solution.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Barrels; kegs.

Uses: (a,b,c) Dyestuff manufacture; (c)

Photographic developer; fur dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Aminosalicylic Acid Hydrochloride. See Acid aminosalicylic hydrochloride.

Aminosalicylic Acid, Para-. See Acid para-aminosalicylic.

Aminosuccinic Acid. See Acid asparaginic.

Aminotoluenyl-ortho-aminothioxynol.
See Dehydrothioxylidine.

Aminoxylene. See Xylidine.

Aminoxylol. See Xylidine.

Ammonia, Anhydrous.*

Derivation: Purified ammonia gas liquefied by cold and pressure.

Grades: Technical; pure.

Containers: Steel cylinders.

Uses: Organic preparations; refrigeration.

Fire hazard: None.
Railroad shipping regulations: Green label.

Ammonia, Aqua. See Ammonium hydroxide.

Ammonia, Liquor* (Gas liquor)

Derivation: A condensed watery solution obtained in the destructive distillation of a bituminous coal in gas or coke manufacture, composed of ammonia and ammonium compounds, and containing sulfuretted hydrogen and cyanogen.

Uses: Production of anhydrous ammonia, aqua ammonia, ammonium hydroxide, ammonium sulfate and other ammonium salts; as a source of ammonia in the Solvay process for producing soda ash. (See sodium carbonate.)

Grades: Technical.

Containers: Tank cars.

Fire hazard: None.

Railroad shipping regulations: None

Ammoniac (Gum ammoniac).

Derivation: Gum resin from *Dorema ammoniacum*.

Habitat: Persia, Northern India and Southern Siberia.

Color and properties: Irregular, rounded tears; peculiar odor; sweetish-bitter, somewhat acrid taste.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine; as ingredient of porcelain cements.

Fire hazard: None.

Railroad shipping regulations: None.

Ammoniac, Oil of*

Color and properties: A dark-yellow, essential oil.

Constants: Specific gravity 0.891; boiling-point 250°-290°C.

Soluble in alcohol, ether, chloroform, benzol.

Derivation: Distilled from gum ammoniac.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ammoniacal Liquor. See Ammonia liquor.

Ammoniacum, B. P. See Ammoniac.

Ammoniated Mercury Chloride. See Mercuric-ammonium chloride.

Ammoniated Mercury Nitrate. See Mercurous oxide, Black.

Ammonii Benzoas, U. S. P., B. P. See Ammonium benzoate.

Ammonii Bromidum, U. S. P., B. P. See Ammonium bromide

Ammonii Carbonas, U. S. P., B. P. See Ammonium carbonate.

Ammonii Chloridum, U. S. P., B. P. See Ammonium chloride.

Ammonii Iodidum, U. S. P. See Ammonium iodide.

Ammonii Salicylas, U. S. P. See Ammonium salicylate.

Ammonii Valeras, U. S. P. See Ammonium valerate

Ammonio-Cupric Sulfate. See Copper-ammonium sulfate.

Ammonio-Ferric Citrate. See Ferric-ammonium citrate.

Ammonio-Ferric Oxalate. See Ferric-ammonium oxalate.

Ammonio-Ferric Sulfate. See Ferric-ammonium sulfate.

Ammonium Acetate* $\text{NH}_4(\text{C}_2\text{H}_3\text{O}_2)$.

Color and properties: White, hygroscopic, crystalline mass.

Constants: Melting-point 89°C .

Soluble in water.

Derivation: By the interaction of glacial acetic acid and ammonia gas.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles; tins.

Uses: Medicine; reagent in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium, Aqua. See Ammonium hydroxide.

Ammonium Benzoate* $(\text{NH}_4)\text{C}_7\text{H}_5\text{O}_2$.

Color and properties: Colorless crystals.

Constants: Melting-point: Decomposes at 193° .

Soluble in water, alcohol and ether.

Derivation: By the action of ammonium hydroxide on benzoic acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles; boxes

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None

Ammonium Bicarbonate* NH_4HCO_3

Color and properties: White crystals

Constants: Specific gravity 1.586; melting-point: Decomposes at 36° - 60°C .

Soluble in water, insoluble in alcohol

Derivation: By heating ammonium hydroxide with an excess of carbon dioxide, and evaporation.

Method of purification: Recrystallization.

Impurities: Ammonium carbonate.

Grades: Technical.

Containers: Barrels; boxes.

Uses: Production of ammonium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Bichromate* $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$.

Color and properties: Yellow needles;

explodes in contact with many substances.

Constants: Specific gravity 2.153; melting-point: Decomposes.

Soluble in water.

Derivation: Action of chromic acid on ammonium hydroxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Barrels; boxes.

Uses: Mordant for dyeing.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Ammonium Bifluoride* $(\text{NH}_4)\text{FHF}$.

Color and properties: White crystals.

Constants: Specific gravity 1.211.

Soluble in cold water; decomposes in hot water.

Derivation: Action of ammonium hydroxide on hydrofluoric acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden boxes; glass bottles

Uses: Ceramics; chemical reagent; etching glass (white acid); sterilizer for brewery, dairy and other equipment.

Fire hazard: None

Railroad shipping regulations: None.

Ammonium Binoxalate*

$(\text{NH}_4)\text{HC}_2\text{O}_4\text{H}_2\text{O}$.

Color and properties: Colorless crystals.

Constants: Specific gravity 1.556.

Soluble in water.

Derivation: Action of ammonium hydroxide on oxalic acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; pure.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Bitartrate* (Acid ammonium tartrate) $(\text{NH}_4)\text{HC}_4\text{H}_4\text{O}_6$.

Color and properties: White crystals.
 Constants: Specific gravity 1.680.
 Soluble in water, acids and alkalis; insoluble in alcohol.
 Derivation: By the action of ammonium hydroxide on tartaric acid.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Barrels.
 Uses: Baking powder.
 Fire hazard: None.
 Railroad shipping regulations: None.

Ammonium Borate* $(\text{NH}_4)_2\text{BO}_3$

Color and properties: Colorless crystals.
 Constants: Specific gravity 2.38-2.95.
 Soluble in water.
 Derivation: By the action of ammonium hydroxide on boric acid with subsequent crystallization.
 Method of purification: Recrystallization.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Ammonium Bromide* NH_4Br

Color and properties: Colorless crystals.
 Constants: Specific gravity 2.327; melting-point: Sublimes.
 Soluble in water, alcohol and ether.
 Derivation: Action of hydrobromic acid on ammonium hydroxide with subsequent crystallization.
 Method of purification: Recrystallization.
 Grades: Technical; pure; U. S. P.; B. P.
 Containers: Boxes; glass bottles.
 Uses: Precipitating silver salts for photographic plates; medicine; analytical chemistry.
 Fire hazard: None.
 Railroad shipping regulations: None.

Ammonium Carbamate (Ammonium carbamate) $\text{NH}_4\text{HCO}_3 \cdot \text{NH}_4\text{CO}_2$

Color and properties: White, crystalline powder; exceedingly volatile; the "anhydride" of ammonium carbonate.
 Constants: Melting-point: Sublimes.

Soluble in water.

Derivation: By the interaction of dry ammonia gas and carbon dioxide. Is recovered from gas liquor with the ammonia and ammonium carbonate.

Grades: Technical.

Containers: Iron drums.

Uses: Production of ammonium carbonate.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Carbamate. See Ammonium carbamate.

Ammonium Carbazotate. See Ammonium picrate.

Ammonium "Carbonate"* ("Hartshorn," a mixture of ammonium acid carbonate and ammonium carbonate; Ammonium crystals)

$(\text{NH}_4)\text{HCO}_3 + (\text{NH}_4)(\text{NH}_2)\text{CO}_2$

Color and properties: Colorless crystal plates; unstable in air, being converted into the bicarbonate.

Constants: Melting-point 85°C .

Soluble in water; decomposes in hot water, yielding ammonia and carbon dioxide.

Derivation: (a) Ammonium bicarbonate is heated with ammonium hydroxide.

(b) Ammonium salts are heated with calcium carbonate.

Grades: Technical; lumps; cubes; powder; U. S. P.; B. P.

Containers: Barrels; boxes; glass bottles.

Uses: Ammonium salts; medicine; baking powders; smelling salts; dyeing; rubber manufacture.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Chloride* (Sal ammoniac) NH_4Cl

Color and properties: White crystals; commercial article grayish.

Constants: Specific gravity 1.520; melting-point: volatilizes.

Soluble in water and ammonium hydroxide.

Derivation: By the action of ammonia

or ammonia salts on hydrochloric acid and crystallization.

Method of purification: Recrystallization.

Grades: Technical lumps or powder; U. S. P.; B. P.

Containers: Wooden barrels.

Uses: Medicine; organic synthesis; electric batteries; soldering flux; textile printing; manufacture of various ammonia compounds, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Chromate* $(\text{NH}_4)_2\text{CrO}_4$.

Color and properties: Yellow crystals

Constants: Specific gravity 1.866; melting-point 185°C .

Soluble in cold water.

Derivation: By the addition of ammonium hydroxide to a solution of ammonium bichromate; recovery by crystallization.

Method of purification: Recrystallization.

Impurities: Bichromates.

Grades: Technical.

Containers: Barrels; boxes.

Uses: Mordant in dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Cuprate.*

Derivation: A cold aqueous solution of copper sulfate is treated with the exact amount of caustic soda, below 20°C ., to produce a blue precipitate. This is washed repeatedly with distilled water, pressed to remove most of the water and dissolved in ammonium hydroxide.

Uses: Waterproofing fabrics.

Ammonium Crystals. See Ammonium carbonate.

Ammonium Dichromate. See Ammonium bichromate.

Ammonium Fluoride* NH_4F .

Color and properties: White crystals.

Soluble in cold water.

Derivation: Interaction of ammonium hydroxide and hydrofluoric acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Gutta-percha or paraffin bottles.

Uses: Fluorides; analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Hydroxide* (Aqua ammonia; Ammonium hydrate) NH_4OH .

Color and properties: Colorless liquid.

Constants: Boiling-point 38.5°C .

Soluble in water.

Derivation: (a) The gas liquor from coke and gas manufacture is distilled, the ammonia and volatile salts are absorbed in sulfuric acid. The resultant ammonium sulfate is heated, sometimes with lime, the ammonia distilled off and collected in water. (b) Waste animal matter from abattoirs is dried and destructively distilled, ammonia being obtained. (c) Decomposition of calcium cyanamid by superheated steam. (d) By union of nitrogen and hydrogen under pressure and by means of a catalytic agent or the electric arc.

Grades: Technical; U. S. P.; 16° ; 20° ; 26° .

Containers: Carboys; iron drums; tank cars.

Uses: Textiles; ammonium compounds; saponifying fats and oils; organic synthesis; detergent.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Hyposulfite. See Ammonium thiosulfate, page 503.

Ammonium "Ichthyolsulfonate." See Ichthyol.

Ammonium Iodide* NH_4I .

Color and properties: White crystals.

Constants: Specific gravity 2.501;

melting-point: Sublimes.

Soluble in water and alcohol.

Derivation: Action of ammonium hy-

dioxide on hydriodic acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes; glass bottles; tins.

Uses: Iodides; medicine; photography.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Meta-vanadate. See Ammonium vanadate.

Ammonium Molybdate* $(\text{NH}_4)_2\text{MoO}_4$.
Color and properties: White, crystalline powder.

Constants: Specific gravity 2.38-2.95; melting-point: Decomposes.

Soluble in acids.

Derivation: Interaction of a solution of molybdic acid and ammonium hydroxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; C. P.

Containers: Glass bottles; boxes.

Uses: Analytical chemistry; manufacture of pigments.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Muriate. See Ammonium chloride.

Ammonium-Nickel Sulfate. See Nickel-ammonium sulfate.

Ammonium Nitrate* NH_4NO_3 .

Color and properties: Colorless crystals; explosive!

Constants: Specific gravity 1.725; melting-point $153^\circ\text{--}166^\circ\text{C}$.; boiling-point: Decomposes at 210°C .

Soluble in water, alcohol and alkalis.

Derivation: By the action of ammonium hydroxide on nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron canisters.

Uses: Pyrotechnics; explosives; manu-

facture of nitrogen monoxide, "laughing gas."

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Ammonium Oxalate*

$(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$.

Color and properties: Colorless crystals.

Constants: Specific gravity 1.502.

Soluble in water.

Derivation: Interaction of ammonium hydroxide and oxalic acid and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; pure.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Perchlorate* NH_4ClO_4 .

Color and properties: White crystals; explosive!

Constants: Specific gravity 1.95; melting-point: decomposes.

Soluble in water.

Derivation: By the interaction of ammonium hydroxide and perchloric acid. Recovery by crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Explosives; pyrotechnics; analytical chemistry.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Ammonium Persulfate* $(\text{NH}_4)_2\text{S}_2\text{O}_8$.

Color and properties: White crystals.

Constants: Melting-point: Decomposes.

Soluble in water.

Derivation: Electrolysis of a concentrated solution of ammonium sulfate. Recovered by crystallization.

Method of purification: Recrystallization.

Grades: Technical; pure.

Containers: Glass bottles; stone crocks.

Uses: Analytical chemistry; photography; oxidizing copper; electro-plating.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Phosphate* (Diammonium ortho-phosphate; Ammonium diphosphate) $(\text{NH}_4)_2\text{HPO}_4$.

Color and properties: White crystals.

Constants: Specific gravity 1.619.

Soluble in water; insoluble in alcohol.

Derivation: Interaction of ammonium hydroxide and phosphoric acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Barrels; boxes.

Uses: Medicine; fireproofing; fertilizers.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Phosphomolybdate*

$2(\text{NH}_4)_8\text{PO}_4 \cdot 24\text{MoO}_3 \cdot 12\text{H}_2\text{O}$.

Color and properties: Yellow, crystalline powder.

Soluble in water and alkali; insoluble in alcohol and acids.

Derivation: By the interaction of ammonium molybdate and phosphoric and nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Reagent for alkalis.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Phosphotungstate* (Ammonium phosphowolframite)

$2(\text{NH}_4)_8\text{PO}_4 \cdot 24\text{WO}_3 \cdot x\text{H}_2\text{O}$.

Color and properties: White powder. Soluble in water and alkali; insoluble in acid.

Derivation: By the interaction of ammonium tungstate, ammonium phosphate and nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Chemical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Phosphowolframite. See Ammonium phosphotungstate.

Ammonium Picrate* (Ammonium carbazotate) $\text{NH}_4\text{C}_6\text{H}_2(\text{NO}_2)_3\text{O}$.

Color and properties: Yellow crystals; highly explosive!

Constants: Melting-point: decomposes.

Soluble in water and alcohol.

Derivation: By the action of ammonium hydroxide on picric acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs or boxes free from metal nails or screws.

Uses: Explosives; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Cannot be shipped by express.

Ammonium Picronitrate. See Ammonium picrate.

Ammonium Salicylate* $\text{NH}_4\text{C}_7\text{H}_5\text{O}_8$.

Color and properties: Colorless crystals.

Soluble in water and alcohol.

Derivation: By the action of ammonium hydroxide on salicylic acid.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Sulfate* $(\text{NH}_4)_2\text{SO}_4$.

Color and properties: Brownish-gray to white crystals according to degree of purity.

Constants: Specific gravity 1.7687; melting-point 140°C .

Soluble in water; insoluble in alcohol.

Derivation: (a) The ammoniacal liquors from the destructive distillation of coal are led into sulfuric acid,

followed by crystallization and drying. This forms the crude ammonium sulfate of commerce. (b) Tankage materials high in nitrogen are heated with sulfuric acid and sodium sulfate. Caustic soda is then added in excess and the ammonia distilled over into sulfuric acid and the sulfate crystallized.

Method of purification: Recrystallization or sublimation.

Grades: Commercial; technical; U. S. P.

Containers: Barrels; bags.

Uses: Fertilizer; ammonium hydroxide.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Sulfide* $(\text{NH}_4)_2\text{S}$.

Color and properties: Yellow crystals. Constants: Melting-point: decomposes.

Soluble in water, alcohol and alkalis.

Derivation: By the interaction of ammonium hydroxide and hydrogen sulfide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron drums; tins; glass bottles.

Uses: Textile industry.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Sulfoyanate* NH_4SCN .

Color and properties: Colorless, deliquescent crystals.

Constants: Specific gravity 1.3057; melting-point 159°C .

Soluble in water and alcohol.

Derivation: By boiling an aqueous solution of ammonium cyanide with sulfur or polysulfides.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Sulfoyanide. See Ammonium sulfoyanate.

Ammonium Tartrate* $(\text{NH}_4)_2\text{C}_4\text{H}_4\text{O}_6$.

Color and properties: White crystals.

Constants: Specific gravity 1.601.

Soluble in water.

Derivation: By the action of tartaric acid on ammonium hydroxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Barrels; boxes.

Uses: Textile industry.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Thiocyanate. See Ammonium sulfoyanate.

Ammonium Thiosulfate. See page 503.

Ammonium Tungstate* (Ammonium wolframate) $(\text{NH}_4)_2\text{W}_{12}\text{O}_{42}\cdot 8\text{H}_2\text{O}$.

Color and properties: White powder.

Soluble in water; insoluble in alcohol.

Derivation: Interaction of ammonium hydroxide and tungstic acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Preparation of ammonium phosphotungstate and other tungsten compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Valerianate. See Ammonium valeriate.

Ammonium Valeriate* (Ammonium valerianate) $\text{NH}_4\text{C}_5\text{H}_9\text{O}_4$.

Color and properties: Colorless crystals; nauseating odor; must be kept well stoppered.

Constants: Melting-point: decomposes.

Soluble in water and alcohol.

Derivation: By the interaction of ammonium hydroxide and valeric acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Vanadate* NH_4VO_3 .

Color and properties: White crystalline powder.

Constants: Melting-point: Decomposes.

Soluble in warm water; slightly soluble in cold water.

Derivation: Interaction of ammonium hydroxide and vanadic acid with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Vanadates; mordant in dyeing and textile printing; manufacture of other vanadium salts; manufacture of inks.

Fire hazard: None.

Railroad shipping regulations: None.

Ammonium Wolframate. See Ammonium tungstate.

Amomum Melegueta (Grains of paradise; Guinea grains; Melegueta pepper; Paradise seed).

Derivation: The seed of *Amomum melegueta*.

Habitat: Ceylon and the western coast of Africa.

Grades: Technical.

Containers: Bags.

Uses: Medicine; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Amygdala Amara, B. P. Bitter almond

Amygdala Dulcis, U. S. P., B. P. Sweet almond.

Amygdalic Acid. See Acid amygdalic.

Amygdalinic Acid. See Acid amygdalic.

Amyl Acetate* (Isoamyl acetate; Banana oil; Amylacetate ether)
 $\text{CH}_3\text{CO}_2\text{C}_5\text{H}_{11}$.

Color and properties: Colorless liquid; banana-like odor.

Constants: Specific gravity 0.8659; boiling-point 148°C .

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By adding sulfuric acid to a mixture of amyl alcohol and acetic acid with subsequent recovery by distillation.

Method of purification: Redistillation.

Grades: Technical; U. S. P.

Containers: Glass bottles; iron drums;

tin cans.

Uses: Preparation of flavoring compounds; solvent for nitrocellulose (gun cotton) in the preparation of lacquers, and waterproofing compounds; bronzing liquids; metallic paints; perfumery.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Amylacetate Ether. See Amyl acetate.

Amyl Alcohol, Active* (Amyl hydrate,

Secondary butylcarbinol)

$\text{C}_2\text{H}_5\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{OH}$.

Color and properties: Clear colorless liquid.

Constants: Specific gravity 0.8169; boiling-point 128°C .

Soluble in water, alcohol and ether.

Derivation: By fractional distillation of the amyl alcohol of fermentation.

Grades: Technical.

Containers: Glass bottles.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Amyl Alcohol, Fermentation* (Fusel oil, Grain oil, Potato spirit)

$\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)_2\text{OH}$.

Color and properties: Clear colorless liquid.

Constants: Specific gravity 0.810; boiling-point 130°C .

Soluble in water, alcohol and ether.

Derivation: Obtained as a by-product in the fermentation of starch or sugar containing materials to produce ethyl alcohol.

Method of purification: Rectification.

Grades: Crude; refined.

Containers: Wooden barrels.

Uses: Production of pure amyl alcohol, amyl acetate and amyl compounds generally.
 Fire hazard: Dangerous.
 Railroad shipping regulations: None.

Amyl Alcohol, Normal*

$\text{CH}_3(\text{CH}_2)_4\text{OH}$.
 Color and properties: Colorless liquid; disagreeable odor.
 Constants: Specific gravity 0.817; boiling-point 138°C .
 Soluble in water, alcohol and ether.
 Derivation: Reduction of valeraldehyde.
 This alcohol is of little importance.

Amyl Alcohol, Tertiary* (Amylene hydrate) $(\text{CH}_3)_3\text{C}(\text{OH})\text{CH}_2$.

Color and properties: Colorless liquid.
 Constants: Specific gravity 0.8144; melting-point -12°C ; boiling-point 102°C .
 Soluble in water, alcohol and ether.
 Derivation: From amylenes by the indirect action of water in presence of sulfuric acid.
 Grades: Technical.
 Containers: Glass bottles; drums, barrels.
 Uses: Fruit essences; organic synthesis.
 Fire hazard: Dangerous.
 Railroad shipping regulations: None.

Amyl Butyrate* (Isoamylbutyric ester) $\text{C}_4\text{H}_7\text{O}_2\text{C}_5\text{H}_{11}$.

Color and properties: Colorless liquid.
 Constants: Specific gravity 0.8592; boiling-point $153^\circ\text{--}155^\circ\text{C}$.
 Soluble in alcohol and ether; slightly soluble in water.
 Derivation: By adding sulfuric acid to a mixture of amyl alcohol and butyric acid with subsequent recovery by distillation.
 Grades: Technical; U. S. P.
 Containers: Glass bottles; iron drums.
 Uses: Manufacture of liqueurs; organic synthesis; extracts.
 Fire hazard: None.
 Railroad shipping regulations: None.

Amyl Ether. See Amyl oxide, page 503.

Amyl Formate* (Isoamyl formate)

$\text{CH}_2\text{OC}_5\text{H}_{11}$.
 Color and properties: Colorless liquid.
 Constants: Specific gravity 0.9018; boiling-point 130.4°C .
 Slightly soluble in water; soluble in alcohol and ether.
 Derivation: By adding sulfuric acid to a mixture of amyl alcohol and formic acid and subsequent recovery by distillation.
 Grades: Technical; U. S. P.
 Containers: Glass bottles; iron drums.
 Uses: Flavoring compounds; fruit sirups.
 Fire hazard: None.
 Railroad shipping regulations: None.

Amyl Hydrate. See Amyl alcohol.

Amyl Hydride. See Pentane.

Amylis Nitris, U. S. P., B. P. See Amyl nitrite.

Amyl Nitrite* (Isoamyl nitrite)

$\text{NO}_2\text{C}_5\text{H}_{11}$.
 Color and properties: Yellowish, transparent, diffusive, unstable liquid; penetrating odor; orange-colored vapor. Keep away from fire or light.
 Constants: Specific gravity 0.880; boiling-point $97^\circ\text{--}99^\circ\text{C}$.
 Soluble in alcohol and ether.
 Derivation: By adding sulfuric acid to the mixture of amyl alcohol and sodium nitrite. The product is recovered by distillation.
 Grades: Technical; U. S. P.; B. P.
 Containers: Dark amber, glass bottles; iron drums.
 Uses: Medicine; perfumes.
 Fire hazard: Dangerous.
 Railroad shipping regulations: Red label.

Amyl Oxide. See page 503.

Amyl Salicylate* $\text{C}_7\text{H}_5\text{O}_8\text{:C}_5\text{H}_{11}$.

Color and properties: Colorless to yellowish liquid.
 Constants: Specific gravity 1.045; boiling-point $268^\circ\text{--}273^\circ\text{C}$.
 Soluble in alcohol and ether; insoluble in water.

Derivation: By adding sulfuric acid to a mixture of isoamyl alcohol and salicylic acid and subsequent recovery by distillation.

Method of purification: Redistillation.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Flavoring extracts; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Amyl Valerianate. See Amyl valeriate.

Amyl Valeriate* ("Apple essence"; "Apple oil"; Amyl valerianate)

$C_4H_9CO_2C_5H_{11}$.

Color and properties: Clear liquid.

Constants: Specific gravity 0.8812; boiling-point 203.7°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By adding sulfuric acid to a mixture of amyl alcohol and valeric acid. Subsequent recovery by distillation.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Iron drums; glass bottles.

Uses: Medicine; flavoring extracts.

Fire hazard: None.

Railroad shipping regulations: None.

Amylene* (Beta-isoamylene; Pental; Pentene; Trimethylethylene)

$(CH_3)_2CCHCH_3$.

Color and properties: Colorless, mobile, inflammable liquid; disagreeable odor; readily polymerized.

Constants: Specific gravity 0.666; boiling-point $37^{\circ}\text{--}42^{\circ}\text{C}$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: (a) By the action of zinc chloride on the amyl alcohol of fermentation. (b) An impure product is separated in the manufacture of pintsch gas.

Method of purification: Rectification.

Grades: Technical; pure.

Containers: Tin cans; glass bottles.

Uses: Local anesthetic.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Amylene Hydrate. See Amyl alcohol, Tertiary.

Amylit. A trade name for diamalt compound, an enzymic product that is used for desizing in the textile industry.

Amylodextrin. See Starch, Soluble.

Amylum, U. S. P., B. P. See Starch.

Analgesine. See Antipyrine.

Anesin. See Chlorotone.

Anesthesia Ether. See Ether.

Anesthesin. See Ethyl-para-aminobenzoate.

Anethi Fructus, B. P. See Anethum.

Anethole* (Anis camphor; Para-methoxypropenylbenzene; Para-allylphenylmethyl ester)

$C_9H_8C_6H_4(OCH_3)$.

Color and properties: Colorless, crystalline mass; liquid at ordinary temperature.

Constants: Specific gravity 0.9936; melting-point $21^{\circ}\text{--}22^{\circ}\text{C}$; boiling-point $232^{\circ}\text{--}234^{\circ}\text{C}$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: From anise and fennel oils by crystallization.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins.

Uses: Flavoring compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Anethum* (Garden dill; Dill seed).

Derivation: Fruit of *Anethum graveolens*.

Habitat: Asia Minor and Europe; cultivated in U. S.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Anglesite. A natural lead sulfate, PbSO_4 . Contains 68 per cent lead. Arizona, California, Colorado, Idaho, Missouri, Nevada, New Mexico, Utah and Wyoming.

Angelic Acid. See Acid angelic.

Angelica Tree. See Xanthoxylum.

Angelica Root Oil* (German).

Color and properties: A limpid liquid, colorless when freshly distilled, becoming yellow on exposure and having a strong aromatic odor and taste. Chief known constituents Phellandrene and valeric acid.

Constants: Specific gravity 0.857 to 0.918; saponification value 37.7; boiling-point $60^\circ\text{--}70^\circ\text{C}$.; refractive index 1.4800; optical rotation $+16$ to $+32$. Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from the root of *Archangelica officinalis*.

Method of purification: Rectification. Grades: Technical.

Containers: Iron drums; glass bottles; tins.

Uses: Medicine; preparation of liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

Angelica Root Oil (Japanese).

Color and properties: Colorless crystals, differing in odor and composition from the German oil; having the character of a fatty acid.

Constants: Specific gravity 0.915; melting-point 62°C .; boiling-point 170° and 300°C .

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from the root of either *Angelica refracta* or *Angelica anomala*.

Method of purification: Rectification. Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Angelica Seed Oil.*

Color and properties: Pale-yellow oil; darkens with age; resembles in odor the oil from the root, but is much finer. Chief known constituents: phellandrene and valeric acid.

Constants: Specific gravity 0.856-0.890; optical rotation $+11$ to $+12$.

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from the seed of *Archangelica officinalis*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; preparation of liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

Angelica (Garden angelica). Herb, root and seed of *Archangelica officinalis*.

Habitat: Europe and Asia.

Grades: Technical.

Containers: Boxes; bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Angelinic Acid. See Acid angelic.

Angostura (Carony bark). Bark of *Cusparia trifoliata*.

Habitat: Northern South America and West Indies.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Angostura Oil.*

Color and properties: A yellow liquid oil, becoming darker on exposure to the air; aromatic odor and taste; chief known constituents: Cadinene, galipol, galipene and pinene.

Constants: Specific gravity: 0.930-0.960; boiling-point $200\text{--}220^\circ\text{C}$.; optical rotation -36 to -50 .

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from the bark of *Galipea cusparia*.

Method of purification: Rectification.
Grades: Technical.
Containers: Iron drums; tins; glass bottles.
Uses: Medicine; preparation of liqueurs and bitters.
Fire hazard: None.
Railroad shipping regulations: None.

Anhalonidine* $C_{12}H_{15}NO_8$.

Color and properties: White crystals; poisonous.
Constants: Melting-point $154^{\circ}C$.
Soluble in water, alcohol and ether.
Derivation: By extraction from mescal buttons.
Method of purification: Crystallization.
Grades: Technical; U. S. P.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Anhalonine* $C_{12}H_{15}NO_8$.

Color and properties: White crystals; poisonous.
Constants: Melting-point $85.5^{\circ}C$.
Soluble in alcohol and ether.
Derivation: By extraction and subsequent crystallization from seed of mescal buttons (Anhalonium lewinii).
Method of purification: Recrystallization.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Anhydrite. A natural calcium sulfate, $CaSO_4$. Contains 41.2 per cent lime and 58.8 per cent sulfur trioxide. Usually associated with gypsum, to which it alters. Differs from it in being harder and in lacking water of crystallization. California, Michigan and Nova Scotia.

Anhydroecgonine* $C_9H_{13}NO_2$.

Color and properties: White crystals; poisonous.
Constants: Melting-point $235^{\circ}C$.

Soluble in water and alcohol.
Derivation: Obtained from ecgonine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Anhydroecgonine Hydrochloride*

$C_9H_{13}NO_2 \cdot HCl$.
Color and properties: White crystals; poisonous.
Constants: Melting-point 240 .
Soluble in water and alcohol.
Derivation: By the action of hydrochloric acid on anhydroecgonine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Aniline* (Aniline oil, Phenylamine, Aminobenzene) ($C_6H_5NH_2$).

Color and properties: Colorless oily liquid; rapidly becomes brown on exposure to air and light; poisonous.
Constants: Specific gravity 1.0235; melting-point $-5.96^{\circ}C$; boiling-point $184.4^{\circ}C$.
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By reduction of nitrobenzene with finely ground cast-iron borings ("Swarf") and acid. The aniline is recovered by distillation.
Method of purification: Redistillation.
Grades: Commercial; pure.
Containers: Iron drums.
Uses: Organic synthesis; dyestuffs; rubber industry.
Fire hazard: None.
Railroad shipping regulations: None.

Aniline Black. A black color developed on cotton and other textiles from a bath containing aniline hydrochloride, an oxidizing agent and a catalyzer (usually a vanadium or copper salt).

Aniline Chloride. See Aniline hydrochloride.

Aniline Hydrochloride* (Aniline salt, Aniline chloride) $C_6H_5NH_2HCl$.
Color and properties: White plates; commercial article frequently greenish in appearance.

Constants: Specific gravity 1.2215; melting-point $198^{\circ}C$.; boiling-point $245^{\circ}C$.
Soluble in water, alcohol and ether.

Derivation: (a) By passing a current of dry hydrochloric acid gas into an ethereal solution of aniline.

(b) Neutralizing aniline at $100^{\circ}C$. with concentrated hydrochloric acid and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis; dyestuffs; dyeing and printing aniline black.

Fire hazard: None.

Railroad shipping regulations: None.

Aniline Oil. See Aniline.

Aniline Red. See Fuchsin.

Aniline Salt. See Aniline hydrochloride.

Anilinesulfonic Acid, Para-. See page 503.

Animal Charcoal. See Charcoal, Animal.

Animal Oil. See Bone oil.

Animé. See Copal.

Anise.* (Anise seed)

Derivation: Fruit of *pimpinella anisum* from cultivated plants.

Habitat: Western Asia, Egypt; cultivated in Southern Europe, India and U. S.

Grades: U. S. P. (Spanish, Star, Levant, Italian); B. P.

Containers: Bags.

Uses: Manufacture of anise oil; condiment; flavor.

Fire hazard: None.

Railroad shipping regulations: None.

Anise Bark Oil.

Color and properties: Light yellow oil, with an odor reminding of saffrol and estragon; spicy, slightly sweetish taste; chief known constituent: Methyl chavicol.

Constants: Specific gravity 0.969.

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from a bark of uncertain botanical origin from Madagascar.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Anise Camphor. See Anethol.

Anise Oil* (*Oleum anisi viridum*, Anise-seed oil, *Illicium* oil, Aniseed oil).

Color and properties: A colorless, thick liquid oil having the identifying characteristic of solidifying at about $15^{\circ}C$. to a crystalline mass; chief constituents: Solid anethol (90 per cent); liquid anethol, a terpene and methyl-chavicol (10 per cent).

Constants: Specific gravity 0.985; melting-point 10° to $15^{\circ}C$. Long standing may reduce the solidifying point to 0° or lower. Refractive index 1.544 to 1.560; optical rotation: *Laevogyrate* $-1.9 + 1$ to 2.0.

Derivation: By distillation of seeds of *Pimpinella anisum*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: As a source of anethol; in medicine as a carminative and to promote the flow of milk; when terpene free in perfumery and to flavor liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

See also: Anise oil, Star.

Anise Oil, Star (*Illicium anisatum*).

Color and properties: Colorless liquid, *laevogyrate* oil; chief constituent:

Anethol; also contains anise aldehyde, safrol, etc.
 Constants: Specific gravity 0.980 to 0.990; solidifying-point 14° to 18°C .; refractive index 1.552 to 1.558.
 Soluble in alcohol and ether.
 Derivation: Expressed from the fruit of *Illicium anisatum*.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Iron drums; tins; glass bottles.
 Uses: Manufacture of liqueurs.
 Fire hazard: None.
 Railroad shipping regulations: None.

Anise-seed Oil. See Anise oil.

Aniseed Oil. See Anise oil.

Anisi Fructus, B. P. See Anise.

Anisic Aldehyde* (Anisaldehyde, Aube-pine, Para-methoxybenzaldehyde)
 $\text{C}_6\text{H}_4(\text{O.CH}_3)\text{CHO}$.

Color and properties: Colorless liquid; aromatic odor.

Constants: Specific gravity 1.126; melting-point -2.1°C .; boiling-point 248°C .
 Soluble in alcohol and ether; insoluble in water.

Derivation: Obtained from anethol by oxidation.

Method of purification: Distillation.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Anisum, U. S. P., B. P. See Anise.

Annabergite. A natural hydrous nickel arsenate, $\text{Ni}_3\text{As}_2\text{O}_8\cdot 8\text{H}_2\text{O}$. Nevada.

Anatto* Vegetable dyestuff containing bixin.

Derivation: From the seeds of *Bixa orellana*.

Habitat: South America and West Indies.

Grades: Technical.

Containers: Boxes.

Uses: Coloring foodstuffs (butter and cheese).

Fire hazard: None.

Railroad shipping regulations: None.

Annidalm. See Thymol iodide.

Annotta. See Anatto.

Anodynine. See Antipyrine.

Anona Oil. See Ylang-ylang oil.

Anthemidis Flores, B. P. See Anthemis.

Anthemis* (Roman chamomile; Ground apple; Chamomile; Garden chamomile).

Derivation: Dried flower heads of *Anthemis nobilis* from cultivated plants.

Habitat: Southern and Western Europe and U. S.; cultivated in Germany, Great Britain, France and Belgium.

Grades: Technical; U. S. P.; B. P.

Containers: Sacks.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Anthion. See Potassium persulfate.

Anthracene* (Para-naphthalene; Anthracin; Anthracene oil)

$\text{C}_{14}\text{H}_{10}$ (CH)₂ $\text{C}_{14}\text{H}_{10}$.

Color and properties: Yellow crystals with blue fluorescence.

Constants: Specific gravity 1.147; melting-point 216°C .; boiling-point 360°C .
 Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By salting out from crude anthracene oil, and draining. The crude salts are purified by pressing and finally, by the use of various solvents, phenanthrene and carbazole are removed. (b) By distilling crude anthracene oil with alkali carbonate in iron retorts, the distillate containing only anthracene and phenanthrene. The latter is removed by carbon bisulfide.

Method of purification: By sublimation with superheated steam, or by crystallization from benzol followed by sublimation.

Impurities: Phenanthrene, carbazole and chrysene.

Grades: Commercial (30-90 per cent).

Containers: Wooden barrels; kegs.

Uses: Dyestuffs; alizarin; phenanthrene; carbazole.

Fire hazard: None.

Railroad shipping regulations: None.

Anthracene Oil. See Anthracene.

Anthracin. See Anthracene.

Anthracite (Hard coal). A hard, black, lustrous coal containing 85 to 95 per cent carbon as against 70 to 85 per cent in bituminous or "soft" coal. See Coal.

Colorado, Massachusetts, New Mexico, Nova Scotia, Pennsylvania and Rhode Island.

Anthragallol* (Trioxyanthraquinone)

$C_{14}H_6(OH)_3O_2$.

Color and properties: Brown powder.

Constants: Boiling-point: Sublimes at $290^{\circ}C$.

Soluble in alcohol; insoluble in water. Derivation: Obtained as a product of the reaction of benzoic, gallic and sulfuric acids.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Anthranilic Acid. See Acid anthranilic.

Anthrapurpurin* (Trihydroxyanthraquinone; Isopurpurin; Purpurine red)
 $C_{14}H_7O_2(OH)_3$.

Color and properties: Orange-yellow, crystalline needles.

Constants: Melting-point: Above $330^{\circ}C$; boiling point $462^{\circ}C$.

Soluble in alcohol and alkalis; slightly soluble in ether and hot water; very slightly soluble in chloroform and benzol.

Derivation: By fusion of anthraquinonedisulfonic acid with caustic soda and potassium chlorate, the melt is run into hot water and the anthrapur-

purin precipitated by hydrochloric acid.

Grades: Technical; pure.

Containers: Kegs; wooden barrels.

Uses: Dyeing; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Anthraquinone* $C_8H_4(CO)_2C_6H_4$.

Color and properties: Yellow needles.

Constants: Specific gravity 1.419-1.438; melting-point $284.6^{\circ}C$; boiling-point $380^{\circ}C$.

Soluble in alcohol, ether and acetone; insoluble in water.

Derivation: By oxidizing a glacial acetic solution of anthracene with alkali bichromate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs; quinazarine.

Fire hazard: None.

Railroad shipping regulations: None.

Antichlor. See Sodium thiosulfate.

Antifebrin. See Acetanilide.

Antiformin. A strong alkaline solution of sodium hypochlorite.

Derivation: By the addition of sodium carbonate to a solution of calcium hypochlorite.

Uses: Disinfectant.

Grades: Technical.

Containers: Wooden barrels; glass bottles.

Fire hazard: None.

Railroad shipping regulations: None.

Antimonii et Potassii Tartras, U. S. P., B. P. See Antimony-potassium tartrate.

Antimonii Oxidum, B. P. See Antimony oxides.

Antimonine. See Antimony lactate.

Antimonium Tartaratum, B. P. See Antimony-potassium tartrate.

Antimony* Sb.

Color and properties: Gray metal, sometimes found native. See also

Cervantite, Dyscrasite, Jamesonite, Nagyagite, Polybasite, Stibiconite and Stibnite.

Arizona, Arkansas, California, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Washington.

Constants: Specific gravity 6.69; melting-point 630°C .

Soluble in acids.

Derivation: Stibnite is roasted in air to remove the sulfur. The white oxide which remains is mixed with carbon and reduced with strong heat.

Grades: Technical.

Containers: Barrels; drums.

Uses: Metallurgy; alloys; type metal; britannia metal; stereotype metal.

Fire hazard: None.

Railroad shipping regulations: None.

Antimony Anhydride. See Antimony oxides, pentoxide.

Antimony, Butter. See Antimony chloride.

Antimony Chloride* (Butter of antimony; Antimony trichloride) SbCl_3 .

Color and properties: Colorless, transparent, crystalline mass. Butter of antimony is a clear strongly caustic liquid with an acid reaction. Sp. Gr.: $1.35=38^{\circ}\text{Be}$.

Constants: Specific gravity 3.064; melting-point 73.2°C ; boiling-point 223.5°C .

Soluble in water, alcohol and acids.

Derivation: By the interaction of chlorine and antimony.

Grades: Technical; Butter of antimony.

Containers: Tins; wooden kegs.

Uses: Antimony salts; bronzing iron; mordant; manufacturing lakes; coloring zinc black.

Fire hazard: None.

Railroad shipping regulations: None.

Antimony Chloride, Basic. See Antimony oxychloride.

Antimony Cinnabar* (Antimony thiosulfate) $\text{Sb}_2\text{S}_2\text{O}_8$. Found as such in nature, or prepared by treating antimony

chloride with a solution of sodium thiosulfate.

Antimony Fluorides*

(a) Antimony trifluoride SbF_3 ; (b)

Antimony pentafluoride SbF_5 .

Color and properties: (a) Octahedral crystals. (b) Oily liquid.

Constants:

| | (a) | (b) |
|------------------|-----------------------|-------|
| Specific Gravity | 4.379 | 2.990 |
| Melting-point | 292°C} | ..... |
| Boiling-point | Sublimes | ..... |

Soluble in water and potassium fluoride.

Derivation: Direct union of antimony and fluorine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tin boxes; lead bottles.

Uses: Ceramics; mordanting cotton.

Fire hazard: None.

Railroad shipping regulations: None.

Antimony Glance. See Stibnite.

Antimony Glass. See Antimony oxides.

Antimony Lactate* (Antimonine)

$\text{Sb}(\text{C}_8\text{H}_7\text{O}_8)_3$.

Color and properties: Tan colored mass.

Soluble in water.

Derivation: By the interaction of antimony hydroxide and lactic acid.

Grades: Technical.

Containers: Wooden barrels.

Uses: Mordant; textile industry.

Fire hazard: None.

Railroad shipping regulations: None.

Antimony Needles. See Antimony sulfide.

Antimony Ocher. See Stibiconite.

Antimony Oxides*

(a) Trioxide Sb_2O_3 ;

(b) Tetraoxide Sb_2O_4 ;

(c) Pentoxide Sb_2O_5 .

Color and properties: White crystals.

Constants: Specific gravity (a) 5.2-5.67.

(b) 4.07. (c) 3.78.

Soluble in acid; insoluble in water.

Derivation: By oxidizing antimony with nitric acid or by combustion of antimony with a limited amount of oxygen.

Grades: Technical.

Containers: Wooden barrels.

Uses: Antimony salts.

Fire hazard: None.

Railroad shipping regulations: None.

Antimony Oxychloride* (Powder of algaroth; Antimony chloride, Basic; Mercurius vitæ)
 SbOCl .

Color and properties: White crystalline powder.

Soluble in hydrochloric acid; insoluble in alcohol and water.

Derivation: By the interaction of water and antimony chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Antimony salts.

Fire hazard: None.

Railroad shipping regulations: None.

Antimony Oxysulfide. See Antimony sulfide.

Antimony Pentafluoride. See Antimony fluorides.

Antimony Pentasulfide. See Antimony sulfide.

Antimony Pentoxide. See Antimony oxides.

Antimony-Potassium Tartrate* (Tartar emetic) $\text{K}(\text{SbO})\text{C}_4\text{H}_4\text{O}_6$.

Color and properties: White powder; poisonous.

Constants: Specific gravity 2.6.

Soluble in water.

Derivation: By heating antimony trioxide with a solution of potassium bitartrate and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden barrels; kegs.

Uses: Mordant; leather dyeing; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Antimony Regulus. See Antimony.

Antimony Red. See Antimony sulfide.

Antimony Salt* A mixture of sodium and antimony fluorides used as a mordant.

Antimony Sulfate* (Antimony trisulfate) $\text{Sb}_2(\text{SO}_4)_3$.

Color and properties: White powder; explosive.

Constants: Specific gravity 4.89.

Decomposes in water.

Derivation: By the action of sulfuric acid on antimony trioxide. Product obtained by crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Explosives; pyrotechnics.

Fire hazard: Dangerous.

Railroad shipping regulations: Cannot be shipped by express—yellow label.

Antimony Sulfide* (Sulfuret of antimony; Antimony red; Antimony trisulfide) Sb_2S_3 .

Color and properties: (a) Black crystals; (b) Orange-red crystals.

Constants: Specific gravity 4.562; melting-point 546°C .

Soluble in ammonium sulfide, potassium sulfide and hydrochloric acid.

Derivation: Occurs in nature as the black crystalline stibnite. As precipitated from solutions of salts of antimony, the trisulfide is an orange-red precipitate, which is filtered, dried and ground.

Grades: Technical.

Containers: Iron barrels.

Uses: Pigment.
Fire hazard: None.
Railroad shipping regulations: None.

Antimony Sulfuret. See Antimony sulfide.

Antimony Tribromide* $SbBr_3$.

Color and properties: Yellow, deliquescent, crystalline mass.

Constants: Specific gravity 4.148; melting-point 94.2°C .; boiling-point 280°C . Soluble in carbon bisulfide and hydrobromic acid.

Derivation: By passing bromine vapors over heated antimony oxide.

Method of purification: Sublimation.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Antimony Trichloride. See Antimony chloride.

Antimony Trifluoride. See Antimony fluorides.

Antimony Trioxide. See Antimony oxides.

Antimony Trisulfate. See Antimony sulfate.

Antimony Trisulfide. See Antimony sulfide.

Antiphlogistine. See Kaolin cataplasm.

Antipyreticum. See Antipyrine.

Antipyrina, U. S. P. See Antipyrine.

Antipyrine* (Dimethyloxyquinizine, Phenazone, Phenyl dimethylpyrazole, Analgesine, Anodynine, Phenylene, Oxydimethylquinizine, Pyrazine, Pyrazoline, Sedatine) $C_{11}H_{12}N_2O$.

Color and properties: Fine, white, crystalline powder.

Constants: Specific gravity 1.19; melting-point 113°C .; boiling-point 319°C . Soluble in water, alcohol and ether.

Derivation: By the condensation of methylphenylhydrazine and ethyl acetoacetate.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ant Oil, Artificial. See Furfural.

Aparatine. See Glue, Vegetable.

Apatite. A natural calcium phosphate containing a little fluorine or chlorine, $Ca_4(CaF)(PO_4)_3$ or $Ca_4(CaCl)(PO_4)_3$. The fluor-apatite contains 42.3 per cent P_2O_5 and the chlor-apatite 41 per cent P_2O_5 . California, Canada, Maine, New Jersey, New York and Virginia.

Uses: Prior to the discovery of the phosphate rock beds of the Southern states large quantities of apatite were mined near Ottawa, Canada and converted into phosphatic fertilizers. It is now used to some extent as a source of phosphorus by an electrolytic process.

Apoatropine* (Atropamine)

$C_{17}H_{21}NO_2$

Color and properties: White crystalline, poisonous alkaloid.

Constants: Melting-point $60^\circ\text{--}62^\circ\text{C}$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: Obtained from atropine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Cans; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Apoatropine Hydrochloride*

$(C_{17}H_{21}NO_2.HCl)$.

Color and properties: Colorless crystals; poisonous.

Constants: Melting-point 237° - 239° C.

Soluble in water.

Derivation: By the action of hydrochloric acid on apoeatropine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Apocodeine $C_{18}H_{19}NO_2$.

Color and properties: White crystalline, poisonous alkaloid.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: Obtained from codeine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Apocynum* (Canadian hemp; American Indian hemp; Black Indian hemp; Indian physic; Dogbane).

Derivation: Dried rhizome of *Apocynum cannabinum*.

Habitat: U. S.

Grades: Technical; U. S. P.

Containers: Sacks.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Apomorphinæ Hydrochloridum, U. S. P., B. P. See Apomorphine hydrochloride.

Apomorphine* $C_{17}H_{17}NO_2$.

Color and properties: White crystalline alkaloid; poisonous.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: Made from morphine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Apomorphine Hydrochloride*

$(C_{17}H_{17}NO_2HCl \cdot \frac{1}{2}H_2O)$.

Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point 200° - 210° C.

Soluble in water and alcohol.

Derivation: Obtained by the action of

hydrochloric acid on apomorphine.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Apple Acid. See Acid malic.

Apple Oil. See Amyl valerate.

Apple, Peru. See Stramonium.

Aqua, U. S. P. Water.

Aqua Ammonia. See Ammonium hydroxide.

Aqua Ammoniaæ, U. S. P. See Ammonium hydroxide.

Aqua Anethi, B. P. Dill water.

Aqua Anisi, B. P. Anise water.

Aqua Carui, B. P. Caraway water.

Aqua Destillata, U. S. P., B. P. Distilled water.

Aqua Fortis. See Acid nitric.

Aqua Laurocerasi, B. P. Cherry-laurel water.

Aqua Regia* (Acid nitrohydrochloric; Acid nitromuriatic; Acid chloronitrous; Acid chlorazotic).

Derivation: A mixture of nitric and hydrochloric acids, usually 18 parts of

nitric acid and 82 parts of hydrochloric acid.
 Color and properties: Fuming yellow, corrosive, suffocating, volatile liquid.
 Grades: Technical; U. S. P.; B. P.
 Containers: Glass bottles.
 Uses: Metallurgy; testing metals; dissolving metals (platinum, etc.)
 Fire hazard: Dangerous.
 Railroad shipping regulations: White label.

Arabinose* $\text{OHCH}_2(\text{CHOH})_4\text{CHO}$.
 Color and properties: White crystals.
 Constants: Melting-point $158.5^\circ\text{--}159.5^\circ\text{C}$.
 Soluble in water; insoluble in alcohol.
 Derivation: (a) From calcium dextrogluconate and hydrogen peroxide.
 (b) By boiling vegetable gum with dilute sulfuric acid.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Arachic Acid. See Acid arachic, page 503.

Arachidic Acid. See Acid arachic, page 503.

Arachis Oil. See Peanut oil.

Aragonite. A natural form of calcium carbonate.

Araroba, B. P. See Chrysarobin.

Arcanum Duplicatum. See Potassium sulfate.

Archangelica. See Xanthoxylum.

Archil. See Orchil, page 506.

Areca (Betel, Pinang).
 Color and properties: The seeds are hard and heavy, round-conical, depressed at the base, externally brown, mottled with fawn spots. The fresh seeds have a faint cheese-like odor.

Habitat: East Indies.
 Derivation: Fruit of *Areca catechu*.
 Grades: Technical.
 Containers: Bags.
 Uses: Medicine; chewed by the natives (mixed with lime) for its stimulating effect.
 Fire hazard: None.
 Railroad shipping regulations: None.

Arecoline Hydrobromide*
 $\text{C}_7\text{H}_{13}\text{NO}_2\text{Br}$.
 Color and properties: White crystals.
 Constants: Melting-point $167^\circ\text{--}168^\circ\text{C}$.
 Soluble in water and alcohol.
 Derivation: By the action of hydrobromic acid on arecoline.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Tins; glass bottles.
 Uses: Veterinary; medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Arenolite. An artificial siliceous-argillaceous-calcareous stone.

Argenti Nitras, U. S. P., B. P. See Silver nitrate.

Argenti Nitras Fusus, U. S. P., B. P. See Silver nitrate, Molded.

Argenti Oxidum, U. S. P. See Silver oxide.

Argentite (Silver glance). A natural silver sulfide, Ag_2S . Contains 87 per cent silver.
 Arizona, Colorado, Idaho, Maine, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

Argentum. The Latin name for silver, hence the symbol Ag in chemical nomenclature.

Argentum Credé. See Collargol.

Argols. By-product of the wine indus-

try, containing crude potassium acid tartrate (cream of tartar).

Argon* A.

Color and properties: Colorless, inert gas, liquefies at -186.1°C .
Soluble in water.

Derivation: (1) By fractional distillation of liquid air.

(2) By mixing atmospheric nitrogen with oxygen in the presence of sodium hydroxide solution and then subjecting the mixture to an electric spark for a long time. Sodium nitrite is formed and a mixture of argon and oxygen. The oxygen is absorbed by passing over red hot copper.

Grades: Technical.

Containers: Steel cylinders.

Uses: Filling electric incandescent lamps.

Fire hazard: None.

Railroad shipping regulations: Green label.

Argilla. See Kaolin.

Argyrodite. A mineral containing sulfides of silver and germanium.

Aristol. See Thymol iodide.

Armoraciae Radix* (Horse-radish root).

Habitat: Cultivated everywhere.

Derivation: The fresh root of *Cochlearia armoracia*.

Grades: Technical; B. P.

Containers: Bags.

Uses: Condiment; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Arnatto. See Annatto.

Arnaudon's Green. See Chromic phosphate.

Arnica Flowers* (Leopard's bane; Wolfsbane; Mountain tobacco).

Derivation: Dried flowers and heads of *Arnica montana*.

Habitat: Northern Europe, Asia and North America.

Grades: Technical; U. S. P.; B. P.

Containers: Sacks.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Arnicae Flores, B. P. See Arnica flowers.

Arnica Oil.*

Color and properties: Yellowish liquid becoming brown with age; strong aromatic odor and taste. The consistency of the oil varies, sometimes it is a butter-like mass.

Constants: Specific gravity 0.906; acid value 75.1; saponification value 29.9.

Soluble in alcohol, ether, chloroform and benzol.

Derivation. Distilled from the flowers of *Arnica montana*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; liniments; etc.

Fire hazard: None.

Railroad shipping regulations: None.

Arrowroot*

Derivation: A starch obtained from the roots of several varieties of plants belonging to the genus *Maranta*.

Grades: Bermuda; St. Vincent; Domestic.

Containers: Bags; barrels.

Uses: Food; sizing; laundry; adhesives.

Fire hazard: None.

Railroad shipping regulations: None.

Arrow Wood. See *Euonymus*.

Arrow Wood. See *Frangula*.

Arsaminol. A trade name for a brand of salvarsan.

Arsanilic Acid. See Acid arsanilic.

Arsenic* As₄.

Color and properties: Silvery crystalline metalloid. Sometimes found na-

tive. (See also Arsenopyrite, Mimetite, Nicolite, Orpiment, Realgar, Scorodite, Smaltite, Sperrylite). California, Canada, Montana, Nevada, Virginia, Washington.

Constants: Specific gravity 4.7-5.7.

Insoluble in water; soluble in nitric acid.

Derivation: Arsenic ores are roasted and the product recovered by sublimation or distillation. The arsenic oxide thus obtained is reduced.

Grades: Technical.

Containers: Barrels.

Uses: Medicine; arsenic salts; metallurgy.

Fire hazard: None.

Railroad shipping regulations: None.

Arsenic Bromide* (Arsenic tribromide; Arsenious bromide) $AsBr_3$.

Color and properties: Yellowish-white crystals; poisonous.

Constants: Specific gravity 3.66; melting-point $31^\circ C$; boiling-point $221^\circ C$.

Soluble in water.

Derivation: By the direct union of arsenic and bromine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Arsenic Disulfide* (Red orpiment; Ruby arsenic; Realgar; Red arsenic glass) As_2S_2 .

Color and properties: Orange-red powder; poisonous.

Constants: Specific gravity 3.4-3.6; melting-point $307^\circ C$.

Soluble in acids and alkalis; insoluble in water.

Derivation: By roasting mispickel and iron pyrites and sublimation.

Grades: Technical.

Containers: Iron canisters.

Uses: Depilatory agent; leather industry; paint pigment; shot manufacture; pyrotechnics; calico dyeing and printing.

Fire hazard: None.

Railroad shipping regulations: None.

Arsenic Glass, Red. See Arsenic disulfide.

Arsenic Hydride. See Arsine.

Arsenic Iodide* (Arsenous iodide; Arsenious iodide; Arsenic triiodide) AsI_3 .

Color and properties: Orange-red shining crystalline scales; poisonous.

Constants: Specific gravity 4.39; melting-point $140.7^\circ C$; boiling-point $394^\circ C$.

Soluble in water, alcohol, ether and carbon bisulfide.

Derivation: By the direct union of arsenic and iodine.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Analytical chemistry; medicine.

Fire hazard: None.

Arsenic Oxide. See Arsenic trioxide.

Arsenic, Ruby. See Arsenic disulfide.

Arsenic Sulfide* (Arsenic pentasulfide) As_2S_5 .

Color and properties: Yellow or orange powder.

Soluble in nitric acid and alkalis; insoluble in water.

Derivation: By the decomposition of sulfoarsenates or by precipitating arsenic acid in a hydrochloric acid solution with hydrogen sulfide. It is filtered then dried.

Grades: Technical.

Containers: Barrels; boxes.

Uses: Paint pigments.

Fire hazard: None.

Railroad shipping regulations: None.

Arsenic Sulfide, Yellow* (Arsenic trisulfide; Arsenous sulfide; Orpiment; King's yellow) As_2S_3 .

Color and properties: Yellow or orange powder.

Constants: Specific gravity 3.40; melting-point $310^\circ C$; boiling-point $700^\circ C$.

Soluble in nitric acid and alkalis; insoluble in water.

Derivation: By leading hydrogen sulfide into a solution of arsenious chloride. The precipitate is filtered and dried.

Impurities: Arsenic sulfide.

Grades: Technical.

Containers: Barrels; boxes.

Uses: Paint pigment; medicine; reducing agent.

Fire hazard: None.

Railroad shipping regulations: None.

Arsenic Tribromide. See Arsenic bromide.

Arsenic Triiodide. See Arsenic iodide.

Arsenic Trioxide* (Arsenious acid; White arsenic; Arsenous oxide; "Arsenic"; Arsenous anhydride) As_2O_3 . Color and properties: White amorphous, odorless, tasteless powder; poisonous.

Constants: Specific gravity 3.865; melting-point $200^{\circ}C$.

Soluble in water, alcohol, acids and alkalis.

Derivation: By roasting arsenical pyrites (mispickel) and recovery of the arsenic trioxide by sublimation.

Method of purification: Sublimation.

Grades: Technical; U. S. P.

Containers: Wooden barrels.

Uses: Manufacture of pigments, glass, shot and bullets, insecticides; rat poison; cattle dip; weed killer; hide preservative; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Arsenic Trisulfide. See Arsenic sulfide, Yellow.

Arsenic, White. See Arsenic trioxide.

Arsenical Nickel. See Niccolite.

Arsenii Iodidum, U. S. P., B. P. See Arsenic iodide.

Arsenii Trioxidum, U. S. P. See Arsenic trioxide.

Arsenious Bromide. See Arsenic bromide.

Arsenious Iodide. See Arsenic iodide.

Arsenious Oxide. See Arsenic trioxide.

Arsenious Sulfide. See Arsenic sulfide, Yellow.

Arseniuretted Hydrogen. See Arsine.

Arsenopyrite (Mispickel). A natural sulfarsenide of iron, $FeAsS$. Contains 46 per cent arsenic, equivalent to 57.7 per cent white arsenic, As_2O_3 . Arizona, California, Canada, Colorado, Connecticut, Georgia, Idaho, Maine, Montana, Nevada, New Hampshire, New York, Carolina, Oregon, South Dakota, Vermont, Virginia, Washington and Wisconsin.

Arsenous Bromide. See Arsenic bromide.

Arsenous Iodide. See Arsenic iodide.

Arsenous Oxide. See Arsenic trioxide.

Arsenous Sulfide. See Arsenic sulfide, Yellow.

Arsine* (Arsenic hydride, Arseniuretted hydrogen) AsH_3 .

Color and properties: Colorless gas; extremely poisonous.

Constants: Specific gravity 2.685.

Soluble in water.

Derivation: By the action of sulfuric acid on metallic zinc mixed with arsenic compounds.

Grades: Technical.

Containers: Steel cylinders.

Uses: Organic synthesis; military poison gas.

Fire hazard: None.

Railroad shipping regulations: Green label.

Arsphenamine. See Salvarsan, page 508.

Artemisia Absinthium Oil. See Worm-wood oil.

Artemisia Maritima. See Worm-seed oil, Levant.

Artificial Cinnabar. See Mercuric sulfide, Red.

Artificial Gum. See Dextrin.

Artificial Gypsum. See Calcium sulfate.

Arum.

Derivation: A starch similar to sago, from the root of *Arum maculatum*.

Habitat: Middle and Southern Europe.

Grades: Technical.

Containers: Bags; barrels.

Uses: Food.

Fire hazard: None.

Railroad shipping regulations: None.

Asafoetida

Derivation: A gum resin obtained from the roots of *Ferula narthes* or *Ferula foetida*. Native in Thibet and Turkistan. Very obnoxious odor.

Grades: U. S. P.; B. P.; technical; lump; powdered.

Containers: Tins.

Uses: Medicine; proprietary remedies.

Fire hazard: None.

Railroad shipping regulations: None.

Asafoetida Oil.*

Color and properties: Light-yellow oil; penetrating disagreeable odor.

Constants: Specific gravity 0.975-0.990; optical rotation $+13^{\circ}$ to $+19^{\circ}$.

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from Gum asafoetida.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; proprietary remedies.

Fire hazard: None.

Railroad shipping regulations: None.

Asarum Canadense Oil*

Color and properties: A yellowish-brown essential oil; agreeable, strong, aromatic odor and taste. Chief known constituents: Asarol and methyl eugenol.

Constants: Specific gravity 0.930-0.960; optical rotation -3.5 .

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from rhizome and roots of *Asarum canadense*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Asarum Europæum Oil*

Color and properties: Thick, brownish liquid; sweetish aromatic odor. Chief known constituents: Asarone, methyl eugenol.

Constants: Specific gravity 1.015-1.068. Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from rhizome and roots of *Asarum europæum*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Asbestos

Derivation: A fibrous variety of amphibole distinguished by its ability to resist high temperatures and the action of acids and capable of being spun and woven. In commerce it includes also fibrous serpentine (crysotile). Amianthus is a fine silky amphibole asbestos. Most of the asbestos of commerce comes from the Province of Quebec, Canada. It is also found in Alabama, Arizona, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Maryland, Massachusetts, New York, North

Carolina, Oregon, South Carolina, Tennessee, Texas, Vermont, Virginia, Washington, Wisconsin and Wyoming.

Uses: Asbestos fabrics for fire-proof clothing, theatre-curtains, etc.; packings; gaskets; building materials; acid-proof filter mass and cloth; diaphragms in electrolytic cells; brake linings, etc.; rubber industry.

Asparagic Acid. See Acid asparaginic.

Asparaginic Acid. See Acid asparaginic.

Aspartic Acid. See Acid asparaginic.

Asphalt (Asphaltum, Bitumen, Judean pitch, Jews' pitch, Mineral pitch).

Derivation: A bituminous mixture, solid or semi-solid, either native or composed of residues from petroleum refining, consisting of a mixture of hydrocarbons and complex derivatives thereof, which melts when heated. Natural asphalt is related in origin to petroleum, is brown or brownish-black in color and is mostly or wholly soluble in turpentine. See also Albertite, Elaterite, Gilsonite, Grahamite, Impsonite, Nigrite and Wurtzilite.

Asphalt occurs in Trinidad, Cuba, Venezuela, Alabama, Arkansas, California, Indiana, Kentucky, Missouri, Nevada, Oklahoma, Texas, Utah, Wyoming, Canada, and in many European countries.

Grades: Technical.

Containers: Barrels.

Uses: Paving material; insulation; black varnish.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Asphaltum. See Asphalt.

Aspidosperma. See Quebracho.

Aspidium* (Male fern; Shield fern; Filixmas).

Derivation: Dried rhizome of *Dryopteris*, etc.

Habitat: North America, Northern Asia, Europe and Northern Africa.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Aspirin. See Acid acetylsalicylic.

Astral Oil. See Kerosene.

Atakamite. A mineral occurring in nature as basic copper chloride.

Atoxyl. See Sodium arsaniolate.

Atoxylic Acid. See Acid arsanic.

Atropamine. See Apotatropine.

Atropina, U. S. P., B. P. See Atropine.

Atropinæ Sulfas, U. S. P., B. P.
Atropine sulfate.

Atropine* (Daturin) $C_{17}H_{23}NO_2$.

Color and properties: Colorless, crystalline alkaloid; poisonous.

Constants: Melting-point 114° - 115° C.

Soluble in water, alcohol and ether.

Derivation: By extraction from *Datura stramonium*.

Method of purification: Crystallization.

Grades: Technical: U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Aubepine. See Anisic aldehyde.

Auerlite. A natural silico-phosphate of thorium. Like zircon in form. North Carolina.

Auramine. A basic yellow dyestuff used in dyeing wool, silk, leather and paper.

Auranth Amari Cortex, U. S. P. See Orange peel, Bitter.

- Auranth Dulcis Cortex, U. S. P.** See Orange peel, Sweet. Soluble in alcohol and ether; insoluble in water. Derivation: By reducing nitrobenzene with sodium stannite.
- Aurantii Cortex Indicus, B. P.** See Orange peel, Bitter. Method of purification: Crystallization. Grades: Technical. Containers: Wooden kegs. Uses: Organic synthesis. Fire hazard: None. Railroad shipping regulations: None.
- Aurantine.** Trade name for Osage orange extract.
- Auri et Sodii Chloridum, U. S. P.** See Gold-sodium chloride. Azobenzide. See Azobenzene.
- Austenite.** A metallographic term denoting a characteristic constituent of very high carbonized steel. Azobenzol. See Azobenzene.
- Australene.** See Pinene. Azotic Acid. See Acid nitric.
- Australian Fever Tree.** See Eucalyptus. Azoxytoluidine. See Diaminazotoluene.
- Autunite.** A natural hydrous phosphate of uranium and calcium; $\text{CaO} \cdot 2\text{UO}_3 \cdot \text{P}_2\text{O}_5 \cdot 8\text{H}_2\text{O}$. Contains 62.7 per cent UO_3 , and is radioactive. South Dakota and Utah. Azurite. A natural blue copper carbonate, $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$. Contains 46 per cent copper. Arizona, Arkansas, British Columbia, California, Colorado, Connecticut, Idaho, Missouri, Montana, Nevada, New Jersey, New Mexico, North Carolina, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Virginia, Wisconsin and Wyoming.
- Autumn Crocus.** See Colchicum.
- Azobenzene*** (Azobenzol; Azobenzide; Benzeneazobenzene). $\text{C}_6\text{H}_5\text{N}_2\text{C}_6\text{H}_5$. Color and properties: Yellow scales. Constants: Melting-point 68°C .; boiling-point 293°C . Azurmalachite. A mineral, being a mixture of the blue and green copper carbonates. Arizona.

B

Babbitt Metal. An alloy containing 65 to 90 per cent of tin, with varying proportions of copper and antimony, used for bearings, etc.

Badische Acid. See Acid beta-naphthylamine-alpha-sulfonic 2:8.

Bael Fruit. See *Belæ fructus*.

Baeyer Acid. See Acid beta-naphthylaminemonosulfonic 2:7.

Bagasse (Megass). By-product of the sugar industry.

Bahama White Wood. See *Canella alba*.

Bakelite.* Condensation products of formaldehyde and phenol or cresol, invented by L. H. Baekeland, used as plastics, insulating materials and synthetic resins, and in the production of lacquers.

Baking Soda. See Potassium bicarbonate and Sodium bicarbonate.

Balata. The gum obtained from the juice of *Mimusops globosa*, native of Guiana, used in the rubber industry.

Baldwin's Phosphorus. Fused nitrate of lime, which emits light for some hours after exposure to sunlight.

Ball Clay. White plastic (fat) clay.

Balm, Mint. See Crisp mint.

Balm Oil (Melissa oil; Lemon-balm oil). Color and properties: Yellow, liquid oil. Chief constituent: Citral. Constants: Specific gravity 0.89-0.925. Soluble in alcohol.

Derivation: By distillation from the leaves and tops of *Melissa officinalis*. Method of purification: Rectification. Grades: Technical. Containers: Tins; glass bottles. Uses: Perfumery; medicine; flavoring. Fire hazard: None. Railroad shipping regulations: None.

Balsam, Canada* (Canada turpentine, Balsam of fir, often improperly called Balsam or balm of Gilead). Color and properties: Yellowish, transparent, viscid liquid, agreeable pine-like odor; bitter taste. Chief known constituents: Pinene and bornyl acetate. Soluble in ether, chloroform, benzol and xylol. Derivation: From *Abies balsamea*. Habitat: Canada and Northern U. S. Grades: Technical. Containers: Iron drums; glass bottles. Uses: Medicine; microscopy. Fire hazard: None. Railroad shipping regulations: None.

Balsam, Capivi. See *Copaiba*.

Balsam, Copaiba. See *Copaiba*.

Balsam, Fir. See *Balsam, Canada*.

Balsam, Peru (Peruvian balsam; Indian balsam; China oil; Black balsam). Color and properties: Dark, molasses-like liquid; pleasant aromatic odor; warm bitter taste. Constants: Specific gravity 1.140-1.150. Soluble in alcohol and ether; miscible in acetone, glacial acetic acid and benzol. Derivation: From *Toluifera pereiræ*. Habitat: San Salvador. Method of purification: Rectification. Grades: Technical; U. S. P.; B. P. Containers: Kegs; iron drums. Uses: Medicine; perfumery. Fire hazard: None. Railroad shipping regulations: None.

Balsam, Storax. See Styra.

Balsam, Sulfur. Sulfurated linseed oil.

Balsam, Tolu (Thomas balsam, Opobalsam, Resin tolu).

Color and properties: Yellowish-brown, semi-liquid or nearly solid resinous mass; aromatic odor and taste.

Constants: specific gravity 1.200; melting-point 60° - 65° C.

Soluble in alcohol, ether, acetone and chloroform.

Derivation: From Toluifera balsamom.

Habitat: South America.

Method of purification: Rectification.

Grades: Technical; U. S. P.; B. P.

Containers: Kegs; iron drums.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Balsamum Peruvianum, U. S. P., B. P.

See Balsam, Peru.

Balsamum Tolutanum, U. S. P., B. P.

See Balsam, Tolu.

Banana Oil. See Amyl acetate.

Banks Oil. See Cod-liver oil.

Bannal. See Scoparius.

Barbaloin. See Aloin.

Barbital. See Veronal.

Barbitone. See Veronal.

Barbitonum, B. P. See Veronal.

Barbituric Acid. See Acid barbituric.

Bardana. See Lappa.

Barilla. An impure carbonate of soda, obtained by drying sea plants and then burning in furnaces, so heated as to imperfectly fuse the ashes.

Barite (Heavy spar). Natural barium sulfate, BaSO_4 . Alabama, Arkansas, Colorado, Connecticut, Georgia, Kentucky, Maryland, Missouri, Nevada, New Mexico, New York, North Carolina, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Virginia, West Virginia, Wisconsin and Wyoming.

Barium* Ba.

Color and properties: Golden-yellow, slightly lustrous, somewhat malleable metal. All barium salts are poisonous and are the cause of "loco" disease in man and cattle.

Constants: Specific gravity 3.78; melting-point 850° C.; boiling-point 950° C.

Soluble in acids; decomposes water.

Derivation: By electrolysis of barium chloride in presence of ammonium chloride.

Grades: Technical (not an article of commerce as yet; small quantities available at a very high price from dealers in rare minerals, etc.).

Containers: Iron drums.

Uses: Barium salts; alloys.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Acetate* $\text{Ba}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$.

Color and properties: White crystals; poisonous.

Constants: Specific gravity 2.02.

Soluble in water.

Derivation: Acetic acid is added to a solution of barium sulfide. The product is recovered by evaporation and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; C. P.

Containers: Wooden barrels; glass bottles.

Uses: Chemical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Binoxide. See Barium peroxide.

Barium Bromide* $\text{BaBr}_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: Colorless crystals; poisonous.

Constants: Specific gravity 3.852.

Soluble in water.

Derivation: By the interaction of barium sulfide and hydrobromic acid, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Manufacturing bromides.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Carbonate* BaCO_3 .

Color and properties: White powder; poisonous; found in nature as the mineral witherite.

Constants: Specific gravity 4.275; melting-point 1360°C .

Soluble in acids; insoluble in water.

Derivation: Sodium carbonate is added to a solution of barium sulfide. The barium carbonate is filtered, washed and dried.

Grades: Technical.

Containers: Barrels; kegs.

Uses: Ceramics; barium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Chlorate* $\text{Ba}(\text{ClO}_3)_2 \cdot \text{H}_2\text{O}$.

Color and properties: Colorless prisms or white powder; poisonous.

Constants: Specific gravity 3.179; melting-point 414°C .

Soluble in water.

Derivation: Electrolysis of barium chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron Drums.

Uses: Pyrotechnics; dyeing.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Barium Chloride* $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: Colorless flat crystals; poisonous.

Constants: Specific gravity 3.097; melting-point 860°C .

Soluble in water.

Derivation: By the action of hydro-

chloric acid on barium sulfide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical (crystals or powdered); U. S. P.

Containers: Wooden barrels; kegs.

Uses: Medicine; leather industry; rat and vermin poison; boiler compounds; analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Chromate* BaCrO_4 .

Color and properties: Heavy, yellow, crystalline powder; poisonous.

Constants: Specific gravity 4.498.

Soluble in acids; insoluble in water.

Derivation: By the interaction of barium chloride and sodium chromate. The precipitate is washed, filtered and dried.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Paint pigment; safety matches.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Cyanide* $\text{Ba}(\text{CN})_2$.

Color and properties: White, crystalline powder; poisonous.

Soluble in water and alcohol.

Derivation: By the action of hydrocyanic acid on barium hydroxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Steel barrels.

Uses: Metallurgy.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Dioxide. See Barium peroxide.

Barium Ethylsulfate* (Barium sulfonate) $\text{Ba}(\text{C}_2\text{H}_5\text{SO}_4)_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: Colorless crystals; poisonous.

Soluble in water and alcohol.

Derivation: By the interaction of barium hydroxide and ethylsulfuric acid.

Method of purification: Crystallization.

Grades: Technical.
Containers: Tins.
Uses: Organic preparations.
Fire hazard: None.
Railroad shipping regulations: None.

Barium Fluoride* BaF_2 .

Color and properties: White powder; poisonous.
Constants: Specific gravity 4.828; melting-point 1280°C .
Sparingly soluble in water.
Derivation: By the interaction of barium sulfide and hydrofluoric acid followed by crystallization.
Grades: Technical.
Containers: Wooden barrels.
Uses: Enamels; antiseptic; embalming fluids.
Fire hazard: None.
Railroad shipping regulations: None.

Barium Hydrate. See Barium hydroxide.**Barium Hydroxide*** (Barium hydrate; Caustic baryta) $\text{Ba}(\text{OH})_2 \cdot 8\text{H}_2\text{O}$.

Color and properties: White powder; poisonous; absorbs carbon dioxide from air. Keep well stoppered!
Constants: Specific gravity 1.656; melting-point 78°C ., losing its water of crystallization; boiling-point 103°C .
Soluble in water, alcohol and ether.
Derivation: (a) By dissolving barium oxide in water with subsequent crystallization. (b) By precipitation from an aqueous solution of the sulfide by caustic soda.

Impurities: Iron and calcium in some commercial grades.

Method of purification: Recrystallization.

Grades: Technical (crystals or anhydrous powder); U. S. P.

Containers: Wooden kegs.

Uses: Organic preparations, barium salts, sugar industry, refining animal and vegetable oils.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Iodide* $\text{BaI}_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: Colorless crystals; decompose and redden on exposure to air; poisonous.

Constants: Specific gravity 5.150; melt-

ing-point: Loses $2\text{H}_2\text{O}$ at 539°C . and melts at 740°C .

Soluble in water and alcohol.

Derivation: By the action of hydriodic acid on barium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Bottles; iron drums.

Uses: Iodides; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Manganate* (Manganese green, Cassel's green, Rosenstiehl's green) BaMnO_4 .

Color and properties: Emerald-green powder; poisonous.

Constants: Specific gravity 4.85.

Insoluble in water; decomposed by acids.

Derivation: By heating manganese dioxide with barium nitrate and barium sulfate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Monosulfide. See Barium sulfide.**Barium Monoxide.** See Barium oxide.**Barium Nitrate*** $\text{Ba}(\text{NO}_3)_2$.

Color and properties: Lustrous, white crystals; poisonous.

Constants: Specific gravity 3.244; melting-point 575°C .

Soluble in water; insoluble in alcohol.

Derivation: By the action of nitric acid on barium carbonate, oxide or hydroxide and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; crystals; fused mass or powder.

Containers: Iron drums.

Uses: Pyrotechnics; green railroad torches; marine signals, etc.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Barium Oxide* (Barium monoxide, Barium protoxide, Calcined baryta) BaO .

Color and properties: White to yellowish-white powder; poisonous; absorbs carbon dioxide readily from air; keep well stoppered.

Constants: Specific gravity 4.73-5.46. Soluble in acids; with water forms the hydroxide.

Derivation: By fusion of barium sulfate mixed with carbon in an electric furnace.

Impurities: Barium carbonate, iron.

Grades: Technical.

Containers: Iron barrels.

Uses: Glass industry; manufacturing barium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Peroxide* (Barium binoxide) BaO_2 .

Color and properties: Grayish-white powder; poisonous!

Constants: Specific gravity 4.96.

Soluble in acids; decomposes in water.

Derivation: By heating the monoxide in a stream of oxygen.

Grades: Technical.

Containers: Iron drums.

Uses: Manufacture of oxygen and hydrogen peroxide; bleaching.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Barium Protoxide. See Barium oxide.

Barium Rhodanide. See Barium sulfocyanate.

Barium Sulfate* (Synthetic or artificial barytes, "Blanc fixe," "Permanent white," Artificial heavy spar) BaSO_4 .

Color and properties: White, crystalline powder; poisonous; found in nature as barite or barytes.

Constants: Specific gravity 4.476.

Soluble in concentrated sulfuric acid; insoluble in water.

Derivation: By the action of sulfuric acid on solutions of barium salts followed by careful drying and grinding.

Grades: Technical; U. S. P.

Containers: Wooden barrels.

Uses: Sizing for paper; leather; paints; pigments; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Sulfide* (Barium monosulfide) BaS .

Color and properties: Yellowish-green or gray powder or lumps; poisonous! Keep from air!

Constants: Specific gravity 4.25.

Soluble in water; insoluble in alcohol.

Derivation: Barium sulfate and coal are roasted in a furnace. The melt is lixiviated with hot water, filtered and evaporated.

Impurities: Iron, arsenic.

Grades: Technical.

Containers: Iron drums.

Uses: Depilatory; barium salts; vulcanizing; weighting gutta-percha; generating perfectly pure hydrogen sulfide for analytical purposes.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Sulfocyanate* (Barium sulfocyanide; Barium rhodanide).

$\text{Ba}(\text{SCN})_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: White crystals; poisonous.

Soluble in water.

Derivation: By heating barium hydroxide with ammonium sulfocyanate and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Iron drums.

Uses: For making aluminum or potassium sulfocyanates.

Fire hazard: None.

Railroad shipping regulations: None.

Barium Sulfocyanide. See Barium sulfocyanate.

Barium Sulfovinat. See Barium ethyl-sulfate.

Barm. See Yeast.

Baryta, Calcined. See Barium oxide.

Baryta, Caustic. See Barium hydroxide.

Baryta Water. A solution of barium hydroxide.

Barytes. See Barium sulfate.

Barytes, Synthetic. See Barium sulfate.

Basalt. A dense to glassy, dark-colored, basic, volcanic rock, composed essentially of soda-lime feldspar and pyroxene; with or without olivine and with accessory magnetite or ilmenite and apatite. The glassy varieties are composed of the uncrystallized constituents of these minerals and are called obsidian. California, Connecticut, Massachusetts, New Jersey, Oregon and Washington.

Basil Oil.

Color and properties: Yellow, liquid oil; aromatic odor; solidifies on long standing.

Chief known constituents: Methyl chavicol, cineol and linalol.

Constants: Specific gravity 0.945-0.987; optical rotation +7 to +12.

Soluble in alcohol.

Derivation: From the leaves of the sweet basil, *Ocimum basilicum*, by distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Flavoring; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

"Basofof." A trade name for Barium sulfate.

Bass Wood. See Linden.

Bastose. The cellulosic substance of jute fiber.

Battery Acid. See Acid, Battery.

Bauxite. Natural hydrated alumina, essentially $Al_2O_3 \cdot 2H_2O$. Alabama, Arkansas, California, Colorado, Georgia, Tennessee and Virginia.

Bay. See Laurus.

Bay-berry. See Laurus and Myrica cerifera.

Bay-berry Oil. See Myrcia oil.

Bay-berry Wax.*

Derivation: From the bark of the Myrica (Candle-berry; Bay-berry; Wax myrtle; Wax-berry; Tallow shrub) by extraction.

Color and properties: Green. The wax consists of palmitin, palmitic acid, myristin and lauric acid.

Grades: Technical.

Containers: Boxes.

Uses: Medicine; candles.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Bay Oil. See Laurel oil, Volatile.

Bay Oil, Sweet. See Laurel oil, Volatile.

Bay Plum. See Guava.

Bay Salt.

Derivation: Produced by exposure of sea-water to evaporation by the action of the atmosphere or the rays of the sun. Contains sodium chloride (sea salt).

Containers: Bags.

Bayer Acid. See Acid beta-naphthylaminemonosulfonic 2:7.

Bean Oil. See Soya-bean oil.

Bean Oil, Chinese. See Soya-bean oil.

Bear's Weed. See Eriodictyon.

Bearberry Bark. See *Cascara sagrada* bark.

Bearwood. See *Cascara sagrada* bark.

Bebeerine* (Bebirine) $C_{18}H_{21}NO_3$.
Color and properties: Yellowish-brown, amorphous powder.
Constants: Melting-point $214^{\circ}C$.
Soluble in water and alcohol.
Derivation: By extraction of the bark of *Nectandra rodæ* or *Pareira brava* and subsequent crystallization.
Method of purification: Recrystallization.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Bebeerine Hydrochloride
 $C_{18}H_{21}NO_3 \cdot HCl$.
Color and properties: Reddish-brown scales.
Constants: Melting-point $259^{\circ}C$.
Soluble in water and alcohol.
Derivation: By the action of hydrochloric acid on bebeerine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass Bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Bebirine. See Bebeerine.

Bees-wax.*
Constants: Specific gravity 0.965-0.969; melting-point 63° - $64^{\circ}C$.
Soluble in alcohol, ether, acetone and chloroform.
Derivation: From the honey-comb of bees by melting in hot water and drawing off the wax into moulds. It is bleached by exposure in thin films to the sun, or by the moderate action of chromic acid, nitric acid, hydrogen peroxide, or ozone generated by electric discharge.
Grades: Crude; refined.

Containers: Boxes.
Uses: Candle making; pharmacy; leather dressing; shoe polishes; cements.
Fire hazard: Dangerous.
Railroad shipping regulations: None.

Belæ Fructus, B. P. (Bacl fruit). The fresh, half-ripe fruit of *Ægle marmelos*.

Belladonna Leaves.* (Deadly nightshade, Death's herb, Banewort, Divale, Poison black cherry).
Derivation: Dried leaves of *Atropa belladonna*.
Habitat: Southern and Central Europe, Asia Minor, Algeria; cultivated in North America.
Grades: Technical; U. S. P.; B. P.
Containers: Boxes.
Uses: Medicine, production of the atropine alkaloids.
Fire hazard: None.
Railroad shipping regulations: None.

Belladonna Root, U. S. P., B. P. (*Belladonna radix*). See *Belladonna leaves*.

Belladonnæ Folia, U. S. P., B. P. See *Belladonna leaves*.

Belladonnæ Radix, U. S. P., B. P. See *Belladonna leaves*.

Bengal Isinglass. See *Agar-agar*.

Bengal Kino. See *Butæ gum*.

Bengal Lights. A mixture of realgar, potassium nitrate and sulfur.

Benne Oil. See *Sesame oil*.

Bentonite. A bedded plastic clay which swells immensely upon wetting. California, Montana, Utah and Wyoming.

Benzal Chloride. See *Benzyl dichloride*.

Benzalacetone. See Benzylidene acetone.

Benzaldehyde* (Benzoic aldehyde, Artificial essential oil of almonds, Benzoyl hydride) C_6H_5CHO .

Color and properties: Colorless, fragrant, volatile oil.

Constants: Specific gravity 1.0504; melting-point $-13.5^{\circ}C$; boiling-point $179.9^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: (a) By heating benzal chloride under pressure with milk of lime and calcium carbonate.

(b) By treating benzol with a gaseous mixture of carbon monoxide and hydrogen chloride in presence of cuprous chloride or aluminum bromide.

(c) Oxidation of toluol with lead dioxide and sulfuric acid, followed by distillation.

Impurities: Chlorine derivatives.

Method of purification: Rectification.

Grades: Technical; f. f. c. (meaning "free from chlorine"); U. S. P.

Note: The specifications, especially regarding impurities, vary considerably for the grades used for dyestuff manufacture from those used in perfumery.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; flavoring compounds; production of synthetic perfumes; manufacture of benzoic acid; dyestuffs; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Benzaldehydum, U. S. P. See Benzaldehyde.

Benzaminæ Lactus, B. P. See Benzamine lactate.

Benzamine Lactate (Benzoylvinyldiacetonealkamine lactate)

$C_{15}H_{21}NO_2 \cdot C_8H_8O_8$.

Color and properties: White crystalline powder; slightly bitter taste.

Soluble in water and alcohol.

Derivation: Neutralization of benzoylvinyldiacetonealkaline with lactic acid.

Grades: Technical; B. P.

Containers: Glass bottles.

Uses: Medicine: production of eucaine.

Fire hazard: None.

Railroad shipping regulations: None.

Benzaminic Acid. See Acid aminobenzoic, Meta-.

Benzaminoacetic Acid. See Acid hippuric.

Benzanilide* (Benzoylanilide; Phenylbenzamine) $C_6H_5NH(COC_6H_5)$.

Color and properties: White to reddish-white crystals.

Constants: Specific gravity 1.306; melting-point 160° - $162^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: From benzoic anhydride and aniline with caustic soda.

Method of purification: Crystallization.

Grades: Technical.

Containers: Kegs.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Benzene. See Benzol.

Benzeneazobenzene. See Azobenzene.

Benzeneazoaniline. See Diazoaminobenzene.

Benzene, Dichloro. See Dichlorobenzene.

Benzene Dibromide, Para-. See Dibromobenzene, Para-.

Benzene, Dibromo. See Dibromobenzene.

Benzene, Monochloro. See Chlorobenzene.

Benzenemonosulfonic acid. See Acid benzenemonosulfonic.

Benzenesulfonic Acid. See Acid benzenemonosulfonic.

Benzenum, B. P. See Benzol.

Benzenylaminothiophenol*



Color and properties: Yellow needles; pleasant odor of tea roses and geranium.

Constants: Melting-point $115^\circ\text{C}.$; boiling-point $300^\circ\text{C}.$

Soluble in alcohol, ether, carbon bisulfide and dilute hydrochloric acid; insoluble in water.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Benzenyl Trichloride. See Benzotrichloride.

Benzidine* (Benzidine base; Para-diaminodiphenol) $\text{C}_6\text{H}_4\text{N}(\text{NH}_2)_2\text{C}_6\text{H}_4$. Color and properties: Grayish-yellow, crystalline powder.

Constants: Melting-point $127^\circ\text{C}.$; boiling-point $400^\circ\text{C}.$

Soluble in alcohol and ether; slightly soluble in water.

Derivation: (a) By reducing nitrobenzene with zinc dust in alkaline solution followed by distillation.

(b) By electrolysis of nitrobenzene, followed by distillation.

(c) Nitration of diphenyl followed by reduction of the product with zinc dust in alkaline solution, with subsequent distillation.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Wooden barrels; kegs.

Uses: Organic synthesis; manufacture of dyestuffs, especially Congo red.

Fire hazard: None.

Railroad shipping regulations: None.

Benzidinedicarboxylic Acid. See Acid diaminodiphenic.

Benzidine Sulfate* (Para-diaminodiphenyl sulfate) $\text{C}_{12}\text{H}_{10}(\text{NH}_2)_2\text{SO}_4\text{H}_2$.

Color and properties: White crystalline powder.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: Action of sulfuric acid and sodium sulfate on benzidine with subsequent recovery by precipitation.

Method of purification: Crystallization.

Grades: Technical.

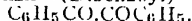
Containers: Wooden barrels; kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Benzil* (Dibenzoyl)



Color and properties: Yellow needles.

Constants: Melting-point $95^\circ\text{C}.$; boiling-point $346^\circ\text{-}348^\circ\text{C}.$

Soluble in alcohol and ether; insoluble in water.

Derivation: From benzoin by oxidation with nitric acid.

Method of purification: Crystallization from alcohol.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Benzine. See Petroleum ether. Note: Do not confuse with Benzene (C_6H_6), known commercially as Benzol. It is often called "Petrol."

Benzinum Purification, U. S. P. See Petroleum ether

Benzo furane. See Para-coumarone.

Benzoglycolic Acid. See Acid amygdalic.

Benzoic Acid. See Acid benzoic.

Benzoic Aldehyde. See Benzaldehyde.

Benzoic Ether. See Ethyl benzoate.

Benzoic Sulfimide, Ortho-. See Saccharin.

Benzoic Trichloride. See Benzotrichloride.

Benzoin (Phenylbenzoylcarbinol; Oxy-phenylbenzylketone)

$C_6H_5.CH(OH).CO.C_6H_5$. Condensation product of benzaldehyde in presence of aqueous potassium cyanide; yellowish crystals; used in medicine. Do not confuse with Gum benzoin.

Benzoin; U. S. P. See Gum benzoin, Siam.

Benzoin, Sumatra; U. S. P. See Gum benzoin, Sumatra.

Benzoinum, U. S. P., B. P. See Gum benzoin, Siam.

Benzol* (Benzene, Phenyl hydride, Coal naphtha) C_6H_6 .

Color and properties: Clear, colorless, inflammable liquid; characteristic odor; solidifies at $6^\circ C$. Benzol is that commercially obtainable liquid which consists essentially of the hydrocarbon, benzene, C_6H_6 .

Constants: Specific gravity 0.87843; melting-point $5.483^\circ C$; boiling-point $79.7^\circ C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) Illuminating gas and coke-oven gas are "scrubbed," by passing through oil which thus becomes saturated with benzol and toluol. The resulting oil is distilled, benzol and toluol being recovered, which are then separated by fractional distillation. (b) Coal-tar, after dehydration, is fractionally distilled yielding "light oil." On distilling this, the first runnings contain the crude benzol. This is successively washed with caustic soda, sulfuric acid and water, and again distilled.

Impurities: Toluol, xylol, tarry substances.

Grades: Crude; straw color; 50 per cent; 90 per cent; 100 per cent; U. S. P.; B. P.

Containers: Iron drums; tank cars; tin cans.

Uses: Nitrobenzene, from which aniline is prepared; chlorobenzene from which phenol is produced; benzenedisulfonic acid for the preparation of resorcin; azobenzene for benzidine; miscellaneous organic preparations; solvent; for motor fuel, alone or with other liquid fuels; paint and varnish removers.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Benzol 160° . See Naphtha, Solvent.

Benzolaminoacetic Acid. See Acid hippuric.

Benzolazoaniline. See Diazoaminobenzene.

Benzolsulfonic Acid. See Acid benzenemonosulfonic.

Benzonaphthol. See Naphthol benzoate, beta-.

Benzonitrile* (Phenyl cyanide)

$C_6H_5.CN$.

Color and properties: Transparent, colorless oil; odor of essential oil of almonds.

Constants: Specific gravity 1.0051; boiling-point $191.3^\circ C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: From benzoic acid by heating with lead sulfocyanate.

Method of purification: Distillation.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Benzophenone* (Diphenylketone)

$(C_6H_5)_2CO$.

Color and properties: Colorless prisms.

Constants: Specific gravity 1.0976; melting-point $48^\circ C$; boiling-point $305.9^\circ C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: From calcium benzoate by dry distillation.

Method of purification: Crystallization from alcohol.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Benzopurpurin. A red substantive dye-stuff formed by combining naphthionic acid with the diazo compound of orthotolidine. (Brownish-red powder.) Used in dyeing wool and silk; various shades known by combinations of letters and numbers, such as 4B, 10B, etc., placed after the name.

Benzoquinone. See Quinone.

Benzosol. A proprietary name for Guaiacol benzoate.

Benzosulfimide. See Saccharin.

Benzosulphinidum, U. S. P. See Saccharin.

Benzotrichloride (Toluene trichloride, Benzenyl trichloride, Benzoic trichloride, Phenylchloroform)
 $C_6H_5.CCl_3$.

Color and properties: Colorless to yellowish liquid; characteristic, penetrating odor.

Constants: Specific gravity 1.38; boiling-point 213° - 214° C.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the chlorination of boiling toluol.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Aniline dye industry.

Fire hazard: None.

Railroad shipping regulations: None.

Benzoylanilide. See Benzanilide.

Benzoyl Chloride* C_6H_5COCl .

Color and properties: Transparent, colorless pungent liquid; vapor causes tears.

Constants: Specific gravity 1.2188; melting-point 0.5° C.; boiling-point 107.2° C.

Soluble in ether; carbon bisulfide; decomposes in water.

Derivation: By the chlorination of benzaldehyde and subsequent distillation.

Method of purification: Redistillation.

Grades: Technical.

Containers: Iron drums.

Uses: Organic preparations.

Fire hazard: None.

Railroad shipping regulations: None.

Benzoylglycin. See Acid hippuric.

Benzoylglycocol. See Acid hippuric.

Benzoyl Hydride. See Benzaldehyde.

Benzoylmethide. See Acetophenone.

Benzoylnaphthol. See Naphthol benzoate, Beta-.

Benzoylsulfonic Imide. See Saccharin.

Benzoylvinyldiacetonealkamine Hydrochloride. See Eucaine, Beta-.

Benzyl Alcohol* $C_6H_5CH_2OH$.

Color and properties: Colorless liquid; faint aromatic odor.

Constants: Boiling-point 206° C.

Soluble in water, alcohol, ether and methyl alcohol.

Derivation: By the action of potassium hydroxide on benzaldehyde and subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Perfumes; organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Benzylamine* $C_6H_5CH_2NH_2$.
 Color and properties: Colorless liquid; strongly alkaline reaction.
 Constants: Specific gravity 0.9813; boiling-point $184.5^\circ C$.
 Soluble in alcohol, ether and water.
 Derivation: By the reduction of thio-benzamine by nascent hydrogen.
 Method of purification: Distillation.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Benzylaniline* $C_6H_5.NH.CH_2.C_6H_5$.
 Color and properties: Colorless prisms.
 Constants: Melting-point $33^\circ C$; boiling-point $310^\circ C$.
 Soluble in alcohol and ether; insoluble in water.
 Derivation: By heating aniline with benzyl chloride.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Wooden barrels.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Benzylbenzene. See Diphenylmethane.

Benzyl Bichloride. See Benzyl dichloride.

Benzyl Bromide.* $C_6H_5CH_2Br$. A military poison gas used in the late war.

Benzyl Carbinol. See Phenylethyl alcohol, page 507.

Benzyl Chloride* $C_6H_5CH_2Cl$.
 Color and properties: Colorless liquid; aromatic odor.
 Constants: Specific gravity 1.1027; melting-point $-41.2^\circ C$; boiling-point $179^\circ C$.
 Soluble in alcohol and ether; insoluble in water.
 Derivation: By passing chlorine over boiling toluol until it has increased 38 per cent in weight. The product is washed with water and separated by fractional distillation.
 Method of purification: Redistillation.

Grades: Technical; U. S. P.
 Containers: Glass carboys; iron drums.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Benzyl Cyanide* (Phenylacetic acid nitrile) $C_6H_5CH_2CN$.
 Color and properties: Colorless liquid.
 Constants: Specific gravity 1.0157; melting-point $-24.6^\circ C$; boiling-point $233.5^\circ C$.
 Soluble in alcohol and ether; insoluble in water.
 Derivation: By the interaction of benzyl chloride and potassium cyanide.
 Method of purification: Distillation.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Benzyl Dichloride* (Benzylidene chloride, Benzal chloride, Benzylene chloride, Chlorobenzal) $C_6H_5CHCl_2$.
 Color and properties: Colorless oily liquid; faint aromatic odor.
 Constants: Specific gravity 1.295; melting-point $16.1^\circ C$; boiling-point $212.4^\circ C$.
 Soluble in alcohol and ether; insoluble in water.
 Derivation: By the chlorination of toluol, until two formula weights of chlorine are absorbed.
 Method of purification: Distillation.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Dyestuffs; substitute for mustard gas in Chemical Warfare Service shell experiments, on account of similarity of physical properties.
 Fire hazard: None.
 Railroad shipping regulations: None.

Benzyl Iodide* $C_6H_5CH_2I$.
 Color and properties: Colorless crystals; vapors cause tears.
 Constants: Specific gravity 1.7335; melting-point $34.1^\circ C$; boiling-point: Decomposes.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of benzyl chloride and hydriodic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Benzylphenylamine. See Benzylamine.

Benzyl Sulfide* $(\text{CH}_2\text{C}_6\text{H}_5)_2\text{S}$.

Color and properties. Colorless tablets.

Constants: Specific gravity 1.0712; melting-point 49°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the action of potassium sulfide on benzyl chloride and subsequent distillation.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Benzylene Chloride. See Benzyl dichloride.

Benzylidene Acetone* (Benzalacetone, Acetocinnamone, Methylcinnamyl ketone, Methylstyryl ketone)
 $\text{C}_6\text{H}_5:\text{CH}:\text{CH}:\text{CO}:\text{CH}_3$.

Color and properties: Colorless crystals; odor of coumarin.

Constants: Melting-point 42°C .

Soluble in alcohol, ether, benzol and chloroform; insoluble in water.

Derivation: By the condensation of benzaldehyde and acetone.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tin cans; iron drums.

Uses: Organic synthesis; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Berberine* $\text{C}_{20}\text{H}_{17}\text{NO}_4 \cdot 6\text{H}_2\text{O}$. ,
Color and properties: White to yellow crystals; poisonous.

Constants: Melting-point 145°C .

Soluble in water and alcohol; very slightly soluble in ether.

Derivation: From the berries of *Berberis vulgaris*, by extraction and subsequent crystallization. The salts of this alkaloid are obtained by the action of the respective acid on the alkaloid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Berberis.

Derivation: Dried stems of *Berberis aristata*.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Berengelite. A pitch-like mineral found in Peru. Used for caulking purposes.

Bergamot Oil.*

Color and properties: Yellowish-green liquid; very fragrant odor; aromatic, bitter taste. Chief known constituents: Limonene, dipentene, linalool and linalyl acetate.

Constants: Specific gravity 0.880-0.885; refractive index 1.465 to 1.470; optical rotation $+9^\circ$ to $+15^\circ$.

Soluble in alcohol, ether, chloroform and benzol.

Derivation: By expression from the rind of the fresh fruit of *Citrus bergamia*.

Grades: Technical; U. S. P.

Containers: Iron drums; tins; glass bottles.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Berlin Blue. See Ferric ferrocyanide.

Berry Alder. See Frangula.

Beryl. A natural metasilicate of glucinum and aluminum.

Beryllium. See Glucinum.

Beryllium Nitrate. See Glucinum nitrate.

Beryllium Oxide. See Glucinum oxide.

Beta-Eucainae Hydrochloricum, U. S. P. See Eucaine, Beta-, Hydrochloride.

Beta-Eucaine. See Eucaine, Beta-.

Beta-Isoamylene. See Amylene.

Beta-Naphthol. See Naphthol, Beta-.

Beta-Naphthol Benzoate. See Naphthol benzoate, Beta-.

Beta-Naphthol Bismuth. See Bismuth beta-naphtholate.

Beta-Naphtholdisulfonic Acid. See Acid naphtholdisulfonic, Beta-.

Beta-Naphtholsulfonic Acid. See Acid naphtholsulfonic, Beta-.

Beta-Naphtholum, U. S. P. See Naphthol, Beta-.

Beta-Naphthylamine. See Naphthylamine, Beta-.

Beta-Naphthylamine-alpha-sulfonic Acid. See Acid, beta-naphthylamine-alpha-sulfonic.

Beta-Naphthylamine-beta-sulfonic Acid. See Acid beta-naphthylamine-beta-sulfonic.

Beta-Naphthylethyl Ester. See Bromel-
ia.

Beta-Naphthylmethyl Ether. See Naphthylmethyl ether, Beta-.

Beta-Phenylacrylic Acid. See Acid cin-
namic.

Beta-Pyridinecarboxylic Acid. See Acid
nicotinic

**Beta-Pyridyl-alpha-normal-methyl-
pyrrolidine.** See Nicotine.

Beta-Quinine. See Quinidine.

Beta-Terpineol. See Terpineol.

Betaine.* The alkaloid of the sugar
beet; colorless crystals; used in medi-
cine, usually in the form of the hydro-
chloride.

Betanol.* The trade name for an oil
used in the production of para-reds,
giving a bluer, bloomier shade.

Betel.

Color and properties: Brown bundles
of leaves; warm, aromatic taste.

Derivation: Dried leaves of Piper
betle.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Betol. A preparation of beta-naphthol
salicylate for medical use.

Betula Oil* (Sweet birch oil, Winter-
green oil).

Color and properties: Colorless or yel-
low liquid; characteristic strong, aro-
matic odor.

Chief known constituent: Methyl sal-
icylate.

Constants: Specific gravity 1.180-1.185.
Soluble in alcohol, ether, chloroform
and benzol.

Derivation: Distilled from the bark of
Betula lenta, so-called sweet cherry
or black birch.

Grades: Technical.

Containers: Iron drums; tins; glass bottles.
Uses: Flavoring agent.
Fire hazard: None.
Railroad shipping regulations: None.

Betulin. A birch-bark resin.

Bibirine. See Bebeerine.

Bicalcic Phosphate. See Calcium phosphate, Dibasic.

Bicarbide of Hydrogen. See Methane.

Bichloroacetic Acid. See Acid dichloroacetic.

Bilberry. See Vaccinium.

Bilifulvin. See Bilirubin.

Bilifuscin. $C_{16}H_{20}N_2O_4$.
Color and properties: Dark-brown powder.
Soluble in alcohol, glacial acetic acid and alkalis; **insoluble in** water.
Derivation: From bile pigment.
Grades: Technical.
Containers: Glass bottles.
Uses: Analytical chemistry.
Fire hazard: None.
Railroad shipping regulations: None.

Biliphaein. See Bilirubin.

Bilirubin* (Biliphaein, Bilifulvin, Cholepyrrhin, Hematoidin) $C_{16}H_{18}N_2O_3$.
Color and properties: Orange-red powder.
Constants: Melting-point 192°C .
Soluble in acids, alkalis, chloroform and benzol; **insoluble in** water.
Derivation: From bile pigment.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles; tins.
Uses: Analytical chemistry.
Fire hazard: None.
Railroad shipping regulations: None.

Bindheimite. A natural hydrous antimonate of lead; an oxidation product of jamesonite. Nevada.

Bi—. See also **Di—**.

Binitrobenzene. See Dinitrobenzene.

Binitrobenzol. See Dinitrobenzene.

Binitrotoluene. See Dinitrotoluene.

Binitrotoluol. See Dinitrotoluene.

Binitronaphthalene. See Dinitronaphthalene.

Biotite. A black or brown mica. See Mica.

Birch-bark Rubber. A dense, black gum from the outer layers of the birch tree, possessing the usual properties of gutta-percha.

Birch Oil*

Color and properties: Yellowish-brown liquid; characteristic odor like that of Russia leather; poisonous! Chief known constituents: Phenols.
Constants: Specific gravity 0.956.
Soluble in alcohol, ether, chloroform, benzol and naphtha.
Derivation: Distilled from birch-tar, obtained from the dry distillation of the wood of *Betula alba*.
Method of purification: Rectification.
Grades: Technical.
Containers: Iron drums; tins.
Uses: Leather dressing; disinfectant.
Fire hazard: None.
Railroad shipping regulations: None.

Birch Oil, Sweet. See *Betula* oil.

Birth-wort. See *Serpentaria*.

Bischofite. A natural hydrated magnesium chloride.

Bismuth* Bi.

Color and properties: Grayish-white, hard, brittle metal, with a reddish tinge; sometimes found native. See also Bismuthinite, Bismutite, Cosalite and Tetradyomite. Arizona, California, Connecticut, Nevada, New Mexico, Utah and Washington.

Constants: Specific gravity 9.745; melting-point $268^{\circ}\text{C}.$; boiling-point $1420^{\circ}\text{C}.$

Soluble in hydrochloric acid and nitric acid; insoluble in water.

Derivation: The ores are roasted to remove sulfur and then reduced by fusing in crucibles with coal, iron and flux.

Impurities: Lead; iron; copper; arsenic; antimony; selenium.

Grades: Technical, about 98 per cent Bi; C. P. powder.

Containers: Boxes; drums.

Uses: Low melting alloys (Wood, Rose and Newton's metals); bismuth salts (almost all of which are used in medicine); dentistry.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth-Ammonium Citrate.

Color and properties: Pearly, shining, transparent scales; slightly acid, metallic taste; becoming opaque on exposure; composition varies.

Soluble in water; slightly soluble in alcohol.

Derivation: By the interaction of bismuth oxynitrate, citric acid and ammonium hydroxide.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; amber glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Benzoate*, $\text{Bi}(\text{C}_7\text{H}_5\text{O}_2)_2$.

Color and properties: White, tasteless powder.

Soluble in mineral acids; insoluble in water.

Derivation: By the interaction of a bismuth salt and benzoic acid.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Beta-Naphtholate* (Orphol) $\text{Bi}(\text{C}_{10}\text{H}_7\text{OH})_3$.

Color and properties: Grayish-yellow powder.

Soluble in alcohol and ether; insoluble in water.

Derivation: By fusing beta-naphthol and bismuth oxide and distilling in vacuo.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Carbolate. See Bismuth phenate.

Bismuth Carbonate. See Bismuth subcarbonate.

Bismuth Chloride* (Bismuth trichloride) BiCl_3 .

Color and properties: White, very deliquescent crystals; volatilized by heat.

Constants: Specific gravity 4.56; melting-point $227^{\circ}\text{C}.$; boiling-point: Decomposes at $300^{\circ}\text{C}.$

Soluble in acids; insoluble in alcohol; decomposes in water to the oxychloride.

Derivation. By the action of hydrochloric acid on bismuth.

Grades: Technical.

Containers: Wooden kegs.

Uses: Bismuth salts.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Chromate.* $\text{Bi}_2\text{O}_3 \cdot 2\text{CrO}_3$.

Color and properties: Orange-yellow amorphous powder.

Soluble in alkalis; insoluble in water.

Derivation: By the interaction of bismuth nitrate and potassium chromate.

Grades: Technical.

Containers: Tins; kegs.

Uses: Pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Gallate, Basic. See Bismuth subgallate.

Bismuth Hydroxide* (Bismuth hydrate; Bismuth trihydroxide; Bismuth trihydrate; Hydrated bismuth oxide) $\text{Bi}(\text{OH})_3$.

Color and properties: White, amorphous powder.

Soluble in acids; insoluble in water.

Derivation: By the action of sodium hydroxide on a solution of a bismuth salt.

Grades: Technical.

Containers: Glass bottles; tins; barrels.

Uses: Bismuth salts.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Iodide* (Bismuth triiodide) BiI_3 .

Color and properties: Grayish-black, metallic, glistening crystals.

Constants: Specific gravity 5.65; melting-point 408°C .

Soluble in alcohol, hydriodic acid and potassium iodide; insoluble in water.

Derivation: By the interaction of bismuth chloride and potassium iodide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Magistery. See Bismuth subnitrate.

Bismuth Nitrate* (Bismuth ternitrate, Bismuth trinitrate) $\text{Bi}(\text{NO}_3)_3 \cdot 5\text{H}_2\text{O}$.

Color and properties: Lustrous, clear, colorless, hygroscopic crystals; acid taste.

Constants: Specific gravity 2.78; melting-point 74°C ; boiling-point: Decomposes $75^\circ\text{--}80^\circ\text{C}$.

Soluble in alcohol and acetone; decomposed by water to the subnitrate.

Derivation: By the action of nitric acid on bismuth, with subsequent recovery by evaporation and crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Tins; kegs.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Oleate.*

Derivation: A combination of bismuth trioxide and oleic acid.

Color and properties: Yellowish-brown, soft, granular mass.

Soluble in ether; insoluble in water.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Oxide. See Bismuth trioxide.

Bismuth Oxide, Hydrated. See Bismuth hydroxide.

Bismuth Oxycarbonate. See Bismuth subcarbonate.

Bismuth Oxychloride* (Bismuthyl chloride, Pearl white) BiOCl .

Color and properties: White, lustrous crystalline powder.

Constants: Specific gravity 7.717.

Soluble in acid; insoluble in water.

Derivation: By the action of water on bismuth chloride.

Grades: Technical.

Containers: Tins; glass bottles; wooden kegs.

Uses: Medicine; face powder; pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Oxyiodotannate. See Ibit.

Bismuth Phenate* (Bismuth carbolate,

Bismuth phenolate, Bismuth phenylate, Phenolbismuth)

$\text{Bi}(\text{OH})_2\text{C}_6\text{H}_5\text{O}$.

Color and properties: Grayish-white powder; odorless and tasteless.

Soluble in acids; insoluble in water, alcohol and ether.

Derivation: By the interaction of bismuth hydroxide and phenol.

Grades: Technical, 80 per cent Bi_2O_3 .

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Phenolate. See Bismuth phenate.

Bismuth Phenolsulfonate* (Bismuth sulfocarbolate, Bismuth sulfophenate).

Color and properties: Pale, reddish powder.

Slightly soluble in water.

Derivation: By the interaction of bismuth hydroxide and phenolsulfonate.

Grades: Technical.

Containers: Tins.

Uses: Medicine, antiseptic.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Pyrogallate* (Helcosol; Basic bismuth pyrogallate)

$\text{C}_6\text{H}_3(\text{OH})\text{O}_2\text{:BiOH}$.

Color and properties: Yellow, amorphous powder; odorless; tasteless.

Soluble in dilute hydrochloric acid; insoluble in water and alcohol.

Derivation: By the action of pyrogalllic acid on bismuth carbonate.

Grades: Technical, 60 per cent Bi_2O_3 .

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Subcarbonate* (Bismuth oxycarbonate, Bismuth "carbonate")

$\text{Bi}_2\text{O}_3\text{:CO}_2\text{:H}_2\text{O}$.

Color and properties: White, odorless powder.

Constants: Specific gravity 6.86.

Soluble in acids; insoluble in water.

Derivation: By adding sodium carbonate to a solution of a bismuth salt.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden barrels; tins.

Uses: Bismuth compounds; face powder; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Subgallate* (Dermatol, Basic bismuth gallate) $\text{Bi}(\text{OH})_2\text{C}_7\text{H}_5\text{O}_5$.

Color and properties: Saffron-yellow powder.

Soluble in dilute alkalis; insoluble in water, alcohol and ether.

Derivation: By adding bismuth gallate to water.

Grades: Technical; U. S. P.

Containers: Tin cans.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Subnitrate* (Magistery of bismuth; Basic bismuth nitrate)

$\text{BiONO}_3\text{:H}_2\text{O}$.

Color and properties: White, heavy powder.

Constants: Specific gravity 4.928; melting-point: Decomposes at 260°C .

Soluble in acids; insoluble in water.

Derivation: By adding bismuth nitrate to water, filtering and drying.

Impurities: Arsenic, lead, silver carbonates. First two especially should be watched for, if article is to be used in pharmacy or medicine.

Grades: Technical, not less than 80 per cent Bi_2O_3 , free from As, Pb, Sb or Ag; U. S. P.; B. P.

Containers: Tins, wooden barrels.

Uses: Medicine, enamels, fluxes, cosmetics.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Subsalicylate* (Basic bismuth salicylate) $\text{Bi}(\text{C}_7\text{H}_5\text{O}_5)_2\text{Bi}_2\text{O}_3$.

Color and properties: White bulky, crystalline powder; tasteless.

Soluble in acids and alkalis; insoluble in water alcohol and ether.

Derivation: By adding bismuth nitrate

to water and treating with salicylic acid.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; barrels.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Sulfide* Bi_2S_3 .

Color and properties: Blackish-brown powder.

Constants: Specific gravity 7.00-7.81;

melting-point: Decomposes.

Soluble in nitric acid; insoluble in water.

Derivation: (a) By melting bismuth and sulfur together. (b) By passing hydrogen sulfide into a solution of a bismuth salt. The precipitate is filtered and dried.

Grades: Technical.

Containers: Tins.

Uses: Bismuth compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Sulfocarbolate. See Bismuth phenolsulfonate.

Bismuth Sulfophenate. See Bismuth phenolsulfonate.

Bismuth Sulfophenylate. See Bismuth phenolsulfonate.

Bismuth Tannate*.

Color and properties: Yellow powder.

Soluble in alcohol; insoluble in water.

Derivation: By the action of tannic acid on bismuth hydroxide.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Tetroxide* (Bismuth peroxide)

Bi_2O_4 .

Color and properties: Heavy, yellowish-brown powder.

Constants: Specific gravity 5.6; melting-point 305°C .

Soluble in acids; insoluble in water.

Derivation: By further oxidation of bismuth trioxide.

Grades: Technical.

Containers: Tins.

Uses: Medicine; bismuth salts.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Tribromophenate (Xeroform,

Bismuth tribromophenolate)

$\text{Bi}_2\text{O}_3(\text{C}_6\text{H}_2\text{Br}_3\text{OH})$.

Color and properties: Yellow, odorless powder.

Insoluble in water and alcohol.

Derivation: By the interaction of bismuth chloride and sodium tribromophenolate. The precipitate is filtered and dried.

Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Medicine; antiseptic.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuth Tribromophenolate. See Bismuth tribromophenate.

Bismuth Trichloride. See Bismuth chloride.

Bismuth Trinitrate. See Bismuth nitrate.

Bismuth Trioxide* (Bismuth oxide)

Bi_2O_3 .

Color and properties: Heavy, yellow powder.

Constants: Specific gravity 8.8; melting-point 820°C .

Soluble in acids; insoluble in water.

Derivation: Ignition of bismuth nitrate.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Bismuthi Betanaphtholas, U. S. P. See Bismuth beta-naphthol.

Bismuthi Carbonas, B. P. See Bismuth subcarbonate.

- Bismuthi et Ammonii Citras**, U. S. P., B. P. See Bismuth-ammonium citrate.
- Bismuthi Salicylas**, B. P. See Bismuth subsalicylate.
- Bismuthi Subcarbonas**, U. S. P., B. P. See Bismuth subcarbonate.
- Bismuthi Subgallas**, U. S. P. See Bismuth subgallate.
- Bismuthi Subnitras**, U. S. P., B. P. See Bismuth subnitrate.
- Bismuthi Subsali-cylas**, U. S. P., B. P. See Bismuth subsalicylate.
- Bismuthinite**. Natural bismuth sulfide, Bi_2S_3 . Contains 81.2 per cent bismuth. Colorado, Connecticut, Nevada and Wyoming.
- Bismuthyl Chloride**. See Bismuth oxychloride.
- Bismutite**. A natural basic bismuth carbonate of doubtful composition, perhaps $\text{Bi}_2\text{O}_3 \cdot \text{CO}_2 \cdot \text{H}_2\text{O}$. Contains about 80 per cent bismuth. California, New Mexico, Utah and Wyoming.
- Bitter Almond Oil**. See Almond oil, Bitter.
- Bitter Almond Oil, Artificial**. See Nitrobenzene.
- Bitter Almond Oil Camphor**. See Gum benzoin.
- Bitter Apple**. See Colocynth.
- Bitter Ash**. See Euonymus or Quassia.
- Bitter Cucumber**. See Colocynth.
- Bitter Damson**. See Simaruba bark.
- Bitter Gourd**. See Colocynth.
- Bitter Herb**. See Erythraea.
- Bitter Root**. See Gentian.
- Bitter Stick**. See Chirata.
- Bitter Wintergreen**. See Chimaphila.
- Bitterwood Tree**. See Quassia.
- Bittern**. Waste liquors from the salt industry, containing calcium and magnesium sulfates.
- Bitumen**. See Asphalt. A general name for various solid and semi-solid hydrocarbons. The term is used by the American Society for Testing Materials to include all those hydrocarbons which are soluble in carbon bisulfide, whether gases, mobile liquids, viscous liquids, or solids.
- Biuret*** (Allophanamide)
 $\text{C}_2\text{H}_5\text{N}_3\text{O}_2 \cdot \text{H}_2\text{O}$.
 Color and properties: White needles.
 Constants: Melting-point 190°C .; boiling-point: Decomposes.
 Soluble in water and alcohol.
 Derivation: From urea by heat.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Analytical chemistry.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Black, Aniline**. See Aniline black.
- Black Antimony**. See Antimony sulfide.
- Black Ash**. A brownish-black or dark gray substance containing, generally, 45 per cent sodium carbonate, 30 per cent calcium sulfide, 10 per cent calcium hydroxide. Met with in certain processes of alkali manufacture.
- Black Balsam**. See Balsam, Peru.

Black Boy Gum. See Gum accroides.

Black, Carbon* (Lampblack, Gas-black)

Derivation: By applying a natural gas or oil flame against cold iron plates or rollers. The carbon is deposited on the plates or rollers.

Grades: Technical.

Containers: Wooden barrels.

Uses: Printing inks; paint pigment; rubber manufacture.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Black Catechu. See Catechu.

Black Cohosh. See Cimicifuga.

Black Dogwood. See Frangula.

Black Fish Oil* (Jaw oil, Malon oil).

Derivation: From the jaws of the blackfish, *Globicephalus melas*, by extraction with hot water.

Color and properties: A pale, yellow, fixed oil, yielding spermaceti (Cetyl palmitate) on standing. The oil obtained from the head and jaw is the finest quality.

Constants: Optical rotation -3° to $+5^{\circ}$; saponification value 290; iodine number 32.8.

Soluble in ether, acetone and chloroform.

Grades: Technical.

Containers: Barrels; tins; glass bottles.

Uses: Lubricant for very fine machinery, watches, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Black, Gas. See Black, Carbon.

Black Haw. See *Viburnum prunifolium*.

Black Henbane. See *Hyoscyamus*.

Blackjack. See Sphalerite.

Black, Lamp. See Black, Carbon.

Black Lead. See Graphite.

Black Mustard. See *Sinapis nigra*.

Black Mustard Oil. See Mustard oil, Volatile.

Black Oxide of Manganese. See Pyrolusite.

Black Pepper Oil. See Pepper oil.

Black, Platinum. See Platinum.

Black Precipitate. See Mercurous oxide, Black.

Black Root. See *Leptandra*.

Black Sampson. See *Echinacea*.

Black Sea Rape Oil. See Ravison oil.

Black Snake-root. See *Cimicifuga*.

Blanc Fixe (Precipitated barium sulfate). See Barium sulfate.

Blanching Liquor. A solution of calcium oxychloride.

Blasting Oil. See Nitroglycerine.

Blau Gas.

Derivation: A modification of Pintsch gas. In this process the oil is decomposed in retorts and after being purified is compressed to 100 atmospheres, so that the greater portion of it liquefies.

Grades: Technical.

Containers: Seamless steel cylinders.

Uses: Industrial heating; domestic illumination and heating.

Fire hazard: Dangerous.

Railroad shipping regulations: Red (gas) label.

Bleach. See Calcium hypochlorite.

- Bismuthi et Ammonii Citras**, U. S. P., B. P. See Bismuth-ammonium citrate.
- Bismuthi Salicylas**, B. P. See Bismuth subsalicylate.
- Bismuthi Subcarbonas**, U. S. P., B. P. See Bismuth subcarbonate.
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- Bitter Root**. See Gentian.
- Bitter Stick**. See Chirata.
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- Bittern**. Waste liquors from the salt industry, containing calcium and magnesium sulfates.
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- Biuret*** (Allophanamide)
 $\text{C}_2\text{H}_5\text{N}_3\text{O}_2 \cdot \text{H}_2\text{O}$.
 Color and properties: White needles.
 Constants: Melting-point 190°C .; boiling-point: Decomposes.
 Soluble in water and alcohol.
 Derivation: From urea by heat.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Analytical chemistry.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Black, Aniline**. See Aniline black.
- Black Antimony**. See Antimony sulfide.
- Black Ash**. A brownish-black or dark gray substance containing, generally, 45 per cent sodium carbonate, 30 per cent calcium sulfide, 10 per cent calcium hydroxide. Met with in certain processes of alkali manufacture.
- Black Balsam**. See Balsam, Peru.

Bone Oil* (Animal oil; Dippel's oil).
Color and properties: Brown, liquid,
fixed oil; repulsive odor.

Chief constituents: Hydrocarbons, pyridine bases, amines.

Constants: Specific gravity 0.900-0.980.
Soluble in water.

Derivation: By the destructive distillation of bones or other animal substance. After extraction with benzol or carbon bisulfide, they are distilled in iron or clay retorts, the volatile products, consisting of gaseous ammonium salts and bone oil, are condensed and the gases containing the ammonium compounds collected in sulfuric acid. The bone oil and aqueous liquor collected are separated by gravity. The crude bone oil is subjected to fractional distillation. The constituents are numerous, the most important being pyridine.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; tank cars.

Uses: Organic preparations; medicine; insectifuge; source of pyrrole.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Boneset. See Eupatorium.

Bone Tallow.*

Color and properties: A foul smelling dark, soft grease.

Derivation: By boiling fresh bones in water to extract the marrow and fat.

Grades: Technical.

Containers: Wooden barrels.

Uses: Cheap, colored soaps.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Boracic Acid. See Acid boric.

Boracite. A mineral containing borax found at Stassfurt, Germany.

Borage* (Burrage; Bee bread; Star-flower).

Derivation: The flowers and leaves of *Borago officinalis*; habitat: Levant; cultivated in U. S. and Germany.

Grades: Technical.

Containers: Boxes; burlap bags.

Uses: Food; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Borax (Tincal) Natural sodium borate $\text{Na}_2\text{O} \cdot 2\text{B}_2\text{O}_3 \cdot 10\text{H}_2\text{O}$. California, Nevada, Oregon and Texas.

Borax Glass. See Sodium borate, fused.

Bordeaux Mixture. A liquid insecticide made chiefly of basic copper sulfate.

Boric Acid. See Acid boric.

Borneene. A volatile and inflammable, oily liquid hydrocarbon.

Borneol* (Borneo camphor; Bornyl alcohol; Isoborneol)

$\text{C}_{10}\text{H}_{17}\text{OH}$.

Color and properties: White, translucent lumps; peculiar camphor-like odor; burning taste.

Constants: Specific gravity 1.011; melting-point 208°C ; boiling-point 212°C . Soluble in alcohol and ether; very slightly soluble in water.

Derivation: (a) By reduction of ordinary camphor with nascent hydrogen.

(b) From the wood of *Dryobalanops*

aromatica. (c) From bornyl chloride.

(d) From camphene. (e) A constituent of pine-needle, ginger, and other essential oils.

Grades: Technical; U. S. P.

Containers: Barrels; kegs; boxes; tins.

Uses: Medicine; manufacture of synthetic camphor.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Bornite (Erubescite, Peacock copper ore). A natural sulfide of copper and iron, Cu_3FeS_8 . Contains 62 per cent copper. Arizona, California, Colorado, Connecticut, Idaho, Maine, Maryland, Montana, Nevada, New Hampshire, New Mexico, North Carolina, Oregon, South Dakota, Utah, Virginia, Washington and Wyoming.

Bornyl Alcohol. See Borneol.

Borolon* Al_2O_3 .

Color and properties: White to dark wine colored, very tough and dense crystalline masses of artificial aluminum oxide.

Constants: Specific gravity 3.9-4.0

Derivation: Prepared by fusion of bauxite in an electric furnace.

Grades: Grains, from 8 mesh to finest powders.

Containers: Kegs.

Uses: Chemical apparatus; abrasives; refractories; grinding wheels; filters.

Fire hazard: None.

Railroad shipping regulations: None.

Boron* B.

Color and properties: Very soft, brown, amorphous powder; ignites in air.

Constants: Specific gravity 2.45.

Soluble in concentrated nitric and sulfuric acids; insoluble in water, alcohol and ether.

Derivation: By heating boric oxide with powdered magnesium.

Grades: Technical.

Containers: Iron drums.

Uses: Boron salts; catalytic agent; metallurgy.

Fire hazard: None.

Railroad shipping regulations: None

Boronotungstic Acid. See Acid borotungstic.

Borophenylic Acid. See Acid borophenylic.

Borotungstic Acid. See Acid borotungstic.

Borowolframic Acid. See Acid borotungstic.

Bottle-nose Oil. A cheap grade of olive oil used in soap-making.

Bottle-rush. See Equisetum.

Boules de Nancy. See Ferrous-potassium tartrate.

Bovey Coal. A variety of brown coal, chiefly a compound of wood and bitumen.

Boxberry. See Gaultheria.

Bran Oil. See Furfural.

Brassil. See Iron pyrites.

Braunite. A somewhat variable, natural manganese silicate, approximately $3\text{Mn}_2\text{O}_3\text{MnO}\cdot\text{SiO}_2$. Arkansas, Georgia, New Jersey and Vermont.

Brayera. See Koussou.

Brazil-nut Oil. See Castanha oil.

Brazil Wax. See Carnauba wax.

Brazil-wood. Redwood of commerce (*Cæsalpinia brasiliensis*.)

Brazil-wood, Yellow. See *Morus tinctoria*.

Brazilian Cacao. See Guarana.

Bremen Green. See Copper carbonate.

Brimstone. See Sulfur.

British Gum. See Dextrin.

Brittle Silver Ore. See Stephanite.

Brochantite. A natural, basic sulfate of copper, $\text{CuSO}_4\cdot 3\text{Cu}(\text{OH})_2$. Arizona, Colorado and New Mexico.

Broenner's Acid. See Acid beta-naphthylamine-beta-sulfonic.

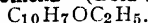
Bromated Camphor. See Camphor monobromate.

Brombenzene. See Bromobenzene, page 503.

Brombenzol. See Bromobenzene, page 503.

Bromcamphor. See Camphor monobromate.

Bromelia* (Beta-naphthylethyl ether)



Color and properties: Colorless crystals.

Constants: Melting-point 32°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of beta-naphthol and ethyl alcohol in presence of sulfuric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Bromic Acid. See Acid bromic.

Bromic Ether. See Ethyl bromide.

.

Brominated Camphor. See Camphor monobromate.

Brominated Methyleneethyl Ketone* (Bromoketone) $\text{CH}_2\text{BrCOC}_2\text{H}_5$ or $\text{CH}_3\text{COCHBrCH}_3$. A military poison gas used in the late war.

Bromine* Br.

Color and properties: Very dark, reddish-brown liquid; irritating fumes.

Constants: Specific gravity 3.1883; melting-point 7.3°C ; boiling-point 58.7°C .

Soluble in water, alcohol, ether and potassium bromide.

Derivation: By direct electrolysis from waste brine of the salt industry.

Method of purification: Distillation.

Grades: Technical.

Containers: Carboys; earthenware bottles; glass bottles.

Uses: Organic synthesis, dyes; bromides; military poison gas.

Fire hazard: None.

Railroad shipping regulations: White label.

Bromine Iodide. See Iodine monobromide.

Bromoacetic Acid. See Acid monobromoacetic.

Bromoacetone* $\text{CH}_2\text{BrCOCH}_3$. A military poison gas used in the late war.

Bromobenzene. See page 503.

Bromobenzyl Cyanide, Ortho.* (Ortho-bromo-2-phenylacetonitrile) $\text{C}_6\text{H}_4\text{CH}_2\text{CNBr}$. A military poison gas used in the late war.

Bromocamphor. See Camphor monobromate.

Bromoform* (Formyl tribromide, Tribromomethane, Methenyl tribromide) CHBr_3 .

Color and properties: Colorless, heavy liquid; odor and taste similar to those of chloroform.

Constants: Specific gravity 2.8887; melting-point 9°C ; boiling-point 151.2°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By heating acetone or ethyl alcohol with bromine and alkali hydroxide, and recovery by distillation.

Method of purification: Redistillation.

Grades: Technical; U. S. P.

Containers: Tin cans; iron drums;

glass bottles.

Uses: Medicine; organic preparations.

Fire hazard: None.

Railroad shipping regulations: None.

Bromoformum, U. S. P. See Bromoform.

Bromoketone. See Brominated methyleneethyl ketone.

Bromol. See Tribromophenol.

Bromomethane. See Methyl bromide.

Bromonaphthalene, Alpha. See Monobromonaphthalene, Alpha-.

Bromo-2-Phenylacetonitrile, Ortho-. See Bromobenzyl cyanide, Ortho-.

Bromosuccinic Acid. See Acid monobromosuccinic.

Bromyrite. A natural silver bromide, AgBr. Contains 57 per cent silver. Nevada and New Mexico.

Brongiardite. A natural lead-silver sulfantimonide, PbAg₂Sb₂S₅. Contains 26.2 per cent silver. Arizona.

Bronner's Acid. See Acid beta-naphthylamine-beta-sulfonic.

Broom. See Scoparius

Brown Coal. See Lignite.

Brown Iron Ore (Limonite, Brown hematite, Bog iron ore). Its approximate formula is 2Fe₂O₃·3H₂O, equivalent to about 59.8 per cent iron. Probably a mixture of hydrous iron oxides. Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

Brucine* C₂₀H₂₆N₂O₄·4H₂O. Color and properties: White crystalline alkaloid; poisonous. Constants: Melting-point 105°C. Soluble in alcohol; slightly soluble in water and ether. Derivation: By extraction and subse-

quent crystallization from nux vomica or ignatia seeds.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

The salts are obtained by the interaction of the acid and the alkaloid.

| Salts | Formula | Melting point | Solubilities |
|---------------|--|---------------|--------------|
| Hydrochloride | C ₂₀ H ₂₆ N ₂ O ₄ ·HCl | | W. |
| Nitrate | C ₂₀ H ₂₆ N ₂ O ₄ ·HNO ₃ ·2H ₂ O | 230°C | W. A. |
| Sulfate | (C ₂₀ H ₂₆ N ₂ O ₄) ₂ ·H ₂ SO ₄ ·7H ₂ O | | |

Brucite. See Magnesium hydroxide.

Brunfelsia. See Manaca.

Brunswick Green. See Copper carbonate.

Bucco. See Buchu.

Buchu, (Bucco; Bucku; Buku).

Derivation: Dried leaves of Barosma betulina.

Habitat: Southern Africa.

Containers: Wooden boxes.

Grades: Technical; U. S. P.; B. P.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Buchu Folia, B. P. See Buchu.

Buckthorn. See Frangula.

Bucku. See Buchu.

Bugbane. See Cimicifuga.

Bugwort. See Cimicifuga.

Buku. See Buchu.

Bulbocapnine.* $C_{19}H_{19}NO_4$.

Color and properties: White crystalline powder.

Constants: Melting-point 199°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By extraction and subsequent crystallization from the tubers of *Corydalis cava*.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Buranhem. See Monesia.

Burdock. See Lappa.

Burgundy Pitch. See Pitch, Burgundy.

Burning Bush. See Euonymus.

Burnt Lime. See Calcium oxide.

Burnt Sugar. See Caramel.

Burrstone. A tough, siliceous rock used for millstones. See Millstone.

Butane Dioxime. See Dimethylglyoxime.

Butea Gum (*Butea gummi*, Bengal kino).

Derivation: Inspissated juice obtained from incisions in the stem of *Butea frondosa*.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Butea Gummi, B. P. See *Butea gum*

Butea Semina, B. P. *Butea* seeds, obtained from *Butea frondosa*.

Butter Color. See Annatto.

Buttercup Yellow. See Zinc chromate.

Butter of Antimony. See Antimony chloride.

Butter of Tin. See Stannous chloride.

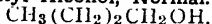
Butter of Zinc. See Zinc chloride.

Butter Oil. Any edible oil used in the manufacture of oleomargarine or other butter substitute.

Butterine. See Cacao-butter.

Butylacetic Acid. See Acid butylacetic.

Butyl Alcohol, Normal.*



Color and properties: Limpid, colorless liquid; vinous odor.

Constants: Specific gravity 0.814; boiling-point 117°C .

Soluble in water, alcohol and ether.

Derivation: (a) By the fermentation of glycerol or mannitol. (b) Technically, together with acetone in the Fernbach process of fermentation of grain or sugar.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; iron drums.

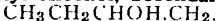
Uses: Manufacturing fruit essences; organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Butyl Alcohol, Iso. See Isobutyl alcohol.

Butyl Alcohol, Secondary*



Color and properties. Limpid, colorless liquid; strong, pleasant odor.

Constants: Specific gravity 0.803; boiling-point 77.8°C .

Soluble in water, alcohol and ether.

Derivation: (a) By the reduction of methyl ethyl ketone. (b) By the reaction of normal butylene and water in presence of sulfuric acid.

Method of purification: Rectification.

Grades: Technical.
 Containers: Glass bottles; barrels; iron drums.
 Uses: Manufacturing fruit essences; organic synthesis.
 Fire hazard: Dangerous.
 Railroad shipping regulations: Red label.

Butyl Alcohol, Tertiary*

$(\text{CH}_3)_2\text{COHCH}_3$.
 Color and properties: White crystals; camphor-like odor.
 Constants: Specific gravity 0.786; melting-point 25.5°C .; boiling-point 83°C .
 Soluble in water, alcohol and ether.
 Derivation: By the action of 75 per cent sulfuric acid on isobutylene.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Glass bottles; barrels; iron drums.
 Uses: Manufacturing fruit essences; organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Butylcarbinol, Secondary. See Amyl alcohol, Active.

Butylchloral Hydrate (Trichlorobutylidene glycol, Butyl-chloral hydras)
 $\text{C}_4\text{H}_7\text{Cl}_3\text{O}_8$.
 Color and properties: Pearly white laminae.

Constants: Melting-point 78°C .
 Soluble in water, glycerin and alcohol.
 Derivation: By adding water to butylchloral.
 Grades: Technical; B. P.
 Containers: Glass bottles.
 Uses: Medicine; in the form of its esters as a solvent of cellulose nitrate, lacquers, etc.
 Fire hazard: None.
 Railroad shipping regulations: None.

Butylene Isobromide* (Dibromoisobutane) $(\text{CH}_3)_2\text{CBrCH}_2\text{Br}$.

Color and properties: Yellowish liquid.
 Constants: Specific gravity 1.798; boiling-point 149°C .
 Soluble in alcohol and ether; insoluble in water.
 Derivation: By the action of bromine on isobutylene.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Butylmercaptan* $\text{C}_4\text{H}_9\text{SH}$. A military poison gas used in the late war.

Butyric Acid. See Acid butyric.

Butyric Alcohol. See Butyl alcohol.

Butyric Ether. See Ethyl butyrate.

Buxine. See Bebeerine.

C

Cabbage-seed Oil.

Derivation: A variety of mustard oil, from *Brassica oleracea*.

Uses: Illuminant; soap manufacture; ointments and liniments; edible oil, substitute for olive oil.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Cacao Butter (*Theobroma* oil, *Cocoa* butter).

Color and properties: Yellowish, brittle, solid fat; chocolate odor and taste.

Constants: Specific gravity 0.976-0.995; saponification value 192-200; iodine value 32-37.7; melting-point 30°-35°C.

Soluble in ether, chloroform, benzol and alcohol.

Derivation: From the cacao bean, the seeds of *Theobroma cacao*.

Grades: Crude; refined, U. S. P.; B. P.

Containers: Wooden barrels; tins.

Uses: Pharmacy; toilet soaps; confectionery; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Cacao Shells (*Theobroma* shells; *Cocoa* shells).

Derivation: Shells of the seed of *Theobroma cacao*.

Habitat: South America, Mexico and West Indies.

Grades: Technical.

Containers: Bags.

Uses: Medicine; manufacture of theobromine.

Fire hazard: None.

Railroad shipping regulations: None.

Cacodylic Acid. See *Acid cacodylic*.**Cadaverine.** See *Ptomaines*.**Cade Oil.**

Color and properties: Thick, clear liquid; tarry odor; burning, bitter taste. Chief known constituent: Cadinene.

Constants: Specific gravity 0.980-1.055.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: By the dry distillation of the wood of *Juniperus oxycedrus*.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Medicine; animal soap; ointments.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium* Cd.

Color and properties: Silver-white, blue-tinged metal.

Constants: Specific gravity 8.642; melting-point 321°C.; boiling-point 766°C.

Soluble in acids; insoluble in water.

Derivation: (a) By extraction from roasted zinc blende, as cadmium sulfate forms the residue. (b) In the reduction of zinc, the cadmium being more volatile, is obtained as a brownish powder. Refined by distillation at low red heat, with reducing material.

Grades: Technical.

Containers: Barrels; bags.

Uses: Alloys; cadmium salts; dental amalgam.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium Bromide* CdBr₂.

Color and properties: Yellowish, crystalline powder.

Constants: Specific gravity 5.192; melting-point 568°C.; boiling-point 806°-812°C.

Soluble in water and alcohol; slightly soluble in ether.

Derivation: By heating cadmium to redness in bromine vapor.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Photography.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium Chloride* (a) CdCl_2 ;

(b) $\text{CdCl}_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: Small white crystals.

Constants: Specific gravity (a) 4.05, (b) 3.327; melting-point (a) 568°C .; boiling-point (a) $861^\circ\text{--}954^\circ\text{C}$.

Soluble in water and alcohol.

Derivation: By the action of hydrochloric acid on cadmium with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; wooden kegs.

Uses: Preparation of cadmium sulfide; analytical chemistry; photography; dyeing and calico printing.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium Hydrate. See Cadmium hydroxide.

Cadmium Hydroxide* (Cadmium hydrate) $\text{Cd}(\text{OH})_2$.

Color and properties: White, amorphous powder.

Constants: Specific gravity 4.79; melting-point: Loses H_2O at 300°C .

Soluble in acids and ammonium hydroxide; insoluble in water and alkalis.

Derivation: By the action of sodium hydroxide on a cadmium salt solution.

Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Cadmium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium Iodide CdI_2 .

Color and properties: Colorless, flaky crystals.

Constants: Specific gravity 5.644; melting-point 385°C .; boiling-point $708^\circ\text{--}719^\circ\text{C}$.

Soluble in water, alcohol and ether.

Derivation: By the action of hydriodic acid on cadmium oxide and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Photography; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium Nitrate* $\text{Cd}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$.

Color and properties: White, amorphous pieces or hygroscopic needles. Keep well stoppered.

Constants: Specific gravity 2.455; melting-point 59.5°C .; boiling-point 132°C .

Soluble in water and alcohol.

Derivation: By the action of nitric acid on cadmium or cadmium oxide and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Ceramic industry (for coloring glass and porcelain).

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Cadmium-Potassium Iodide*

$\text{CdI}_2 \cdot 2\text{KI} \cdot 2\text{H}_2\text{O}$.

Color and properties: White powder.

Constants: Specific gravity 3.359.

Soluble in water, alcohol and ether.

Derivation: By combining cadmium iodide and potassium iodide in solution, in proportion of their combining weights and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; C. P.

Containers: Tins; glass bottles.

Uses: Analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium Sulfate* (a) CdSO_4 ; (b) $3\text{CdSO}_4 \cdot 8\text{H}_2\text{O}$; (c) $\text{CdSO}_4 \cdot 4\text{H}_2\text{O}$.

Constants: Specific gravity (a) 4.72; (b) 3.087; (c) 3.05; melting-point (a) 1000°C .

Soluble in water.

Derivation: By the action of dilute sul-

furic acid on cadmium or cadmium oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; kegs.

Uses: Manufacture of normal cadmium electric cells.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium Sulfide* (Cadmium yellow; Jaune brilliant) CdS .

Color and properties: Light yellow powder.

Constants: Specific gravity 3.9-4.8; boiling-point 980°C .

Soluble in acids; insoluble in water.

Derivation: By passing hydrogen sulfide gas into a solution of a cadmium salt, acidified with hydrochloric acid.

The precipitate is filtered and dried.

Grades: Technical.

Containers: Barrels; tins.

Uses: Paint pigments; soap color; pyrotechnics; mixing with ultramarine to produce green pigments.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium Tungstate* (Cadmium wolframate) CdWO_4 .

Color and properties: Yellow crystals.

Soluble in ammonium hydroxide; very slightly soluble in water.

Derivation: By the interaction of cadmium nitrate and ammonium tungstate.

Grades: Technical.

Containers: Barrels.

Uses: Fluorescent paint.

Fire hazard: None.

Railroad shipping regulations: None.

Cadmium Wolframate. See Cadmium tungstate.

Cadmium Yellow. See Cadmium sulfide.

Cæsalpina echinata. See Lima wood.

Cæsium* Cs.

Color and properties: Silver-white, soft ductile metal; decomposes water, set-

ting free hydrogen which ignites. Must be kept immersed in naphtha or kerosene.

Constants: Specific gravity 1.87; melting-point 28.45°C ; boiling-point 670°C .

Soluble in acids and alcohol; decomposes water.

Derivation: By the reduction of cæsium oxide by means of powdered magnesium.

Grades: Technical.

Containers: Glass bottles.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Cæsium-Aluminum Sulfate* (Cæsium alum) $\text{Cs}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$.

Color and properties: Colorless crystals.

Constants: Specific gravity 2.0215; melting-point 117°C .

Soluble in water; insoluble in alcohol.

Derivation: By adding a solution of cæsium sulfate to a solution of potassium sulfate, concentrating and crystallizing.

Method of purification: Recrystallization.

Grades: Pure.

Containers: Glass bottles; tins.

Uses: Mineral waters.

Fire hazard: None.

Railroad shipping regulations: None.

Cæsium Carbonate* Cs_2CO_3 .

Color and properties: White, deliquescent, crystalline powder.

Constants: Boiling-point: Decomposes at 610°C .

Soluble in water, alcohol and ether.

Derivation: By passing carbon dioxide into a solution of cæsium oxide and subsequent crystallization.

Grades: Pure.

Containers: Glass bottles.

Uses: Brewing; manufacture of mineral waters.

Fire hazard: None.

Railroad shipping regulations: None.

Cæsium Chloride* CsCl .

Color and properties: Colorless crystals.

Constants: Specific gravity 3.972; melting-point 646°C .

Soluble in water and alcohol.

Derivation: By the action of hydrochloric acid on cæsium oxide and crystallization.

Method of purification: Recrystallization.

Grades: Pure.

Containers: Glass bottles; tins.

Uses: Medicine; brewing; manufacturing mineral waters.

Fire hazard: None.

Railroad shipping regulations: None.

Cæsium Nitrate* CsNO_3 .

Color and properties: Glittering, crystalline powder.

Constants: Specific gravity 3.687; melting-point 414°C .

Soluble in water; slightly soluble in alcohol.

Derivation: By the action of nitric acid on cæsium oxide and crystallization.

Method of purification: Recrystallization.

Grades: Pure.

Containers: Tins; glass bottles.

Uses: Cæsium salts.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Cæsium Oxides* (a) Cs_2O ; (b) Cs_2O_2 ; (c) Cs_2O_3 ; (d) Cs_2O_4 .

Color and properties:

(a) Orange-red crystals

(b) Yellow needles.

(c) Chocolate-brown crystals.

(d) Yellow crystals.

| | | | | |
|------------------|------|---------------------------------------|-----------------------|-----------------------|
| Constants: | (a) | (b) | (c) | (d) |
| Specific gravity | 4.78 | 4.47 | 4.25 | 3.77 |
| Melting-point | .... | 400° - 450°C | 400°C | 515°C |

Solubilities:

| | | | | |
|-------|--------------|---------|------------|---------|
| | (a) | (b) | (c) | (d) |
| Water | Very soluble | Soluble | Decomposed | Soluble |
| Acids | Soluble | Soluble | Soluble | Soluble |

Derivation: By calcining cæsium nitrate.

Grades: Technical; Pure.

Containers: Tins.

Uses: Cæsium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Cæsium Silicate* Cs_2SiO_3 .

Color and properties: Yellow, crystalline powder.

Insoluble in water.

Derivation: By the interaction of a cæsium salt and sodium silicate.

Grades: Technical; pure.

Containers: Tins.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Cæsium Sulfate* Cs_2SO_4 .

Color and properties: Colorless crystals.

Constants: Specific gravity 4.2434.

Soluble in water; insoluble in alcohol.

Derivation: By the action of sulfuric acid on cæsium carbonate.

Method of purification: Crystallization.

Grades: Pure.

Containers: Kegs.

Uses: Brewing; mineral waters.

Fire hazard: None.

Railroad shipping regulations: None.

Caffea usta. Roasted coffee beans.

Caffea viridis. Dry, unroasted coffee beans.

Caffeina, U. S. P., B. P. See Caffeine.

Caffeina Citrata, U. S. P., B. P. Caffeine, Citrated.

Caffeinae-Sodio Benzoas, U. S. P. Caffeine-sodium benzoate.

Caffeine* (Theine; Guaranine; Methyltheobromine; Trimethylxanthine) $\text{C}_8\text{H}_{10}\text{N}_4\text{O}_2 \cdot \text{H}_2\text{O}$.

Color and properties: White, fleecy masses or long flexible, silky crystalline alkaloid.

Constants: Melting-point 236.8°C .

Soluble in chloroform; slightly soluble in water and alcohol; very slightly soluble in ether.

Derivation: By extraction of coffee, tea, guarana, paraguay tea or kola nuts,

evaporation of the solvent and crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Caffeine Salts:

Caffeine benzoate

$C_8H_{10}N_4O_2 \cdot C_7H_6O_2$.

Caffeine citrate

$C_8H_{10}N_4O_2 \cdot C_6H_8O_7$.

Caffeine hydrobromide

$C_8H_{10}N_4O_2 \cdot HBr \cdot 2H_2O$.

Caffeine hydrochloride

$C_8H_{10}N_4O_2 \cdot HCl \cdot 2H_2O$.

Color and properties: White crystals.

All caffeine salts are soluble in water, alcohol and ether.

Derivation: By the action of the respective acids on caffeine.

Method of purification: Crystallization

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cahoun Oil. See Cohune oil.

Cahune Oil. See Cohune oil.

Cajeputene. See Dipentene.

Cajeputol. See Eucalyptol.

Cajuput Oil.

Color and properties: Thin, colorless or greenish liquid. Chief known constituents: Cineol and terpinol.

Constants: Optical rotation -10° to -4° ; refractive index 1.460 to 1.466.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: Distilled from the leaves of *Melaleuca leucadendron*.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calabar. See Physostigma.

Calamine. A natural hydrous zinc silicate, $2ZnO \cdot SiO_2 \cdot 11_2O$. Contains 54 per cent zinc. Arkansas, Connecticut, Kansas, Maryland, Missouri, Nevada, Oklahoma, Pennsylvania, Tennessee and Virginia.

Calamus* (Sweet flag, Calmus, Sweet cane, Sweet grass).

Derivation: Unpeeled, dried rhizome of *Acorus calamus*.

Habitat: Europe, North America and Western Asia.

Grades: U. S. P.

Containers: Bales; bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calamus Oil (Oil of sweet flag).

Color and properties: A clear, thick, brownish-yellow liquid; strong aromatic odor; aromatic, bitter taste.

Chief known constituents: Asarone, eugenol, acetic acid, fatty acids.

Constants: Specific gravity 0.960-0.980; boiling-point 170° - $300^\circ C$; optical rotation $+10$ to $+31$; refractive index 1.507-1.515.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the rhizome of *Acorus calamus* (Sweet flag).

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; tins; glass bottles.

Uses: Preparation of liqueurs; medicine; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Calaverite. A natural telluride of gold and silver $(Au.Ag)Te_2$. Variable in composition, but contains about 39.5 per cent gold and 3.1 per cent silver. California and Colorado.

- Calcined Baryta.** See Barium oxide.
- Calcic Liver of Sulfur.** See Calcium sulfide.
- Calcii Bromidum, U. S. P.** See Calcium bromide.
- Calcii Carbonas Præcipitatus, U. S. P., B. P.** See Calcium carbonate, Precipitated.
- Calcii Chloridum, U. S. P., B. P.** See Calcium chloride.
- Calcii Glycerophosphas, U. S. P.** See Calcium glycerophosphate.
- Calcii Hydras, B. P.** See Calcium hydroxide.
- Calcii Hypophosphis, U. S. P., B. P.** See Calcium hypophosphite.
- Calcii Lactas, U. S. P., B. P.** See Calcium lactate.
- Calcii Phosphas, B. P.** See Calcium phosphate, Dibasic.
- Calcii Sulphidum Crudum, U. S. P.** See Lime, Sulfurated.
- Calcinol.** See Calcium lactate.
- Calciovolborthite.** A natural vanadate of copper and calcium. Contains about 38 per cent V_2O_5 . California, Colorado and Utah.
- Calcite (Calcspar).** Natural crystallized calcium carbonate, $CaCO_3$. Contains 56 per cent lime, CaO . Kentucky, Minnesota, Missouri and Tennessee.
- Calcium* Ca.**
Color and properties: Soft, white metal; brilliant crystalline surface when freshly cut. Keep dry, in well stoppered bottles.
Constants: Specific gravity 1.5446; melting-point $805^\circ C$.
Soluble in acid; decomposes water slowly.
Derivation: By electrolyzing molten calcium chloride.
Containers: Airtight tins; glass bottles.
Fire hazard: None.
Railroad shipping regulations: None.
- Calcium Acetate* $Ca(C_2H_3O_2)_2 \cdot H_2O$.**
Color and properties: Brown or gray lumps or white crystals.
Soluble in water; slightly soluble in alcohol.
Derivation: By the action of pyroligneous acid on calcium hydroxide, the solution being filtered and evaporated to dryness, yielding gray acetate of lime. If the acid is neutralized with lime before distilling off the methyl alcohol, the product is contaminated with much tar and when evaporated to dryness forms "brown acetate of lime."
Method of purification: Recrystallization.
Grades: Technical; brown, grey, pure.
Containers: Barrels; freight cars.
Uses: Manufacture of acetone; manufacture of acetic acid.
Fire hazard: None.
Railroad shipping regulations: None.
- Calcium Arsenate* (Tricalcium ortho-arsenate) $Ca_3(AsO_4)_2$.**
Color and properties: White powder. Very slightly soluble in water.
Derivation: By the interaction of calcium chloride and sodium arsenate.
Grades: Technical.
Containers: Wooden barrels.
Uses: Insecticide; germicide.
Fire hazard: None.
Railroad shipping regulations: None.
- Calcium Arsenite* $CaAsO_3 \cdot H$.**
Color and properties: White, granular powder.
Insoluble in water.
Derivation: By the interaction of calcium chloride and sodium arsenite.

Grades: Technical.

Containers: Wooden barrels.

Uses: Germicides; insecticides.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Benzoate* $\text{Ca}(\text{C}_7\text{H}_5\text{O}_2)_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: White powder or crystals. Keep well stoppered.

Soluble in water.

Derivation: By the action of benzoic acid on calcium hydroxide.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Biphosphate. See Calcium phosphate, Monobasic.

Calcium Bisulfite* $\text{Ca}(\text{HSO}_3)_2$.

Color and properties: Yellowish liquid with strong sulfur dioxide odor.

Soluble in water and acids.

Derivation: By action of sulfur dioxide on calcium hydroxide.

Strength of solution: 8°Be.

Grades: Technical.

Containers: Iron drums

Uses: Antichlor; textile industries; preservative; bleaching sponges.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Bromide* (a) CaBr_2 ;

(b) $\text{CaBr}_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: White, granular, very deliquescent crystals; sharp, saline taste.

Constants:

Specific gravity (a) 3.353.

Melting-point (a) 680°-760°C.; (b) 35°C.

Boiling-point (a) 806°-812°C.; (b) 149°-150°C.

Soluble in water.

Derivation: By the action of hydrobromic acid on calcium oxide, carbonate or hydroxide and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Manufacturing mineral waters; photography; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Carbide* ("Carbide") CaC_2 .

Color and properties: Grayish-black, irregular lumps; must be kept dry.

Constants: Specific gravity 2.22.

Decomposes in water, with formation of acetylene.

Derivation: By the interaction of finely pulverized limestone or quick lime with crushed coke or anthracite in an electric furnace.

Grades: Technical.

Containers: Iron barrels; tin cans.

Uses: Generation of acetylene gas; signal fires; metallurgy; reduction of copper sulfide; production of calcium cyanamide.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Carbonate* (Chalk; Limestone) CaCO_3 .

Color and properties: White amorphous powder or colorless crystals.

Constants: Specific gravity 2.72-2.95.

Soluble in acids; insoluble in water.

Derivation: Found in nature in many forms.

(a) Limestone, a compact, indistinctly crystalline variety.

(b) Marble, a distinctly crystalline form.

(c) Chalk, a deposit consisting of the calcareous parts of minute organisms.

(d) Calcite and Iceland spar, pure crystallized forms.

(e) As a precipitate by adding a soluble carbonate to a calcium salt solution.

Grades: Technical; precipitated; U. S. P.; B. P.

Containers: Barrels; burlap bags, freight cars.

Uses: Metallurgy, manufacture of calcium oxide, medicine, dentifrices, paint pigments, ceramics, glass, building stone, organic synthesis, carbon dioxide.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Chlorate* $\text{Ca}(\text{ClO}_3)_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: White to yellowish crystals. Keep well stoppered.

Soluble in water and alcohol.

Derivation: By the action of chlorine on calcium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron canisters; glass bottles.

Uses: Photography, pyrotechnics.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Calcium Chloride* (a) CaCl_2 ; (b) $\text{CaCl}_2 \cdot \text{H}_2\text{O}$; (c) $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: White, deliquescent crystals, granules or lumps.

Constants: Specific gravity (a) 2.152; (c) 1.654.

Soluble in water and alcohol.

Derivation: (a) By the action of hydrochloric acid on calcium carbonate and subsequent crystallization.

(b) Commercially obtained as a by-product in the Solvay soda process and in the manufacture of potassium chlorate.

Method of purification: Recrystallization.

Grades: Technical; fused; pure; U. S. P.; B. P. frequently sold in solutions of different concentrations.

Containers: Iron drums.

Uses: Dehydrating agent; preservative; fire proofing paints; freezing mixtures; sizing compounds; mineral waters; making ammonium chloride.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Cyanamide* (Lime nitrogen, Nitrolim; "Cyanamide") CaCN_2 .

Color and properties: White crystals. Decomposes in water, liberating ammonia.

Derivation: Calcium carbide is finely powdered and heated in an electric oven, into which nitrogen is passed. The charge remains in the furnace 24 to 36 hrs. It is then removed and the calcium carbide that is uncombined is leached out.

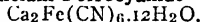
Grades: Technical.

Containers: Iron barrels; tank cars.

Uses: Fertilizers; nitrogen products.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Ferrocyanide*

Color and properties: Yellow crystals.

Soluble in hot water.

Derivation: By decomposing ferric ferrocyanide with quicklime in a closed vessel with steam. The solution of calcium ferrocyanide is evaporated and recovered by crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Potassium ferrocyanide.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Fluoride* CaF_2 .

Color and properties: White powder.

Constants: Specific gravity 3.15-3.18; melting-point 1300°C .

Soluble in concentrated sulfuric acid; insoluble in water.

Derivation: (a) By powdering pure fluorite or fluorspar.

(b) By the interaction of a soluble calcium salt and sodium fluoride.

Grades: Technical.

Containers: Wooden barrels; freight cars.

Uses: Flux in metallurgy; manufacturing hydrofluoric acid; ceramics; enamels; etching glass; calcium cyanamide.

Fire hazard: None.

Railroad shipping regulations: None.

See also Fluorspar.

Calcium Glycerinophosphate. See Calcium glycerophosphate.**Calcium Glycerophosphate*** (Calcium glycerinophosphate) $\text{Ca}(\text{C}_3\text{H}_5\text{O}_6\text{P})_2$.

Color and properties: White, crystalline powder.

Derivation: By extraction from cereal grains.

Grades: Technical; pure; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Guaiacolmonosulfonate. See Guaiacyl.

Calcium Hydrate. See Calcium hydroxide.

Calcium Hydroxide* (Calcium hydrate; Slaked lime; Lime hydrate)
 $\text{Ca}(\text{OH})_2$.

Color and properties: White, dry powder.

Constants: Specific gravity 2.078; melting-point: Loses water at 580°C .

Soluble in acids; very slightly soluble in water.

Derivation: By the action of water on calcium oxide.

Impurities: Calcium carbonate, magnesium salts, iron.

Grades: Technical; chemical lime (insoluble matter under 2 per cent, Mg under 3 per cent); building lime; B. P.

Containers: Wooden barrels; paper bags.

Uses: Mortar; cements; calcium salts; depilatory; manufacture of lime paints; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Hypochlorite* (Calcium oxychloride; "Chloride of lime"; Calx chlorinata, Bleaching powder)
 $\text{Ca}(\text{ClO})_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: White powder; strong chlorine odor.

Decomposes in water and acids.

Derivation: By conducting chlorine into a box-like structure containing slaked lime spread upon perforated shelves.

Grades: Technical.

Containers: Wooden barrels; iron drums.

Uses: Textile bleaching; organic synthesis; deodorizer; disinfectant.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Hypophosphite* $\text{Ca}(\text{H}_2\text{PO}_2)_2$.
Color and properties: White to grayish-white crystals.

Soluble in water; insoluble in alcohol.

Derivation: By boiling lime, water and phosphorus together, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Iron canisters; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Iodide* CaI_2 .

Color and properties: Yellowish-white powder; decomposes in air by absorption of carbon dioxide.

Constants: Specific gravity 3.956; melting-point $631^\circ\text{--}740^\circ\text{C}$; boiling-point $708^\circ\text{--}719^\circ\text{C}$.

Soluble in water, ethyl alcohol and amyl alcohol.

Derivation: By the action of hydriodic acid on calcium carbonate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Kegs; glass bottles.

Uses: Photography.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Lactate (Calcinol)

$\text{Ca}(\text{C}_3\text{H}_5\text{O}_3)_2 \cdot 5\text{H}_2\text{O}$.

Color and properties: White, almost tasteless powder.

Constants: Melting-point: Loses $3\text{H}_2\text{O}$ at 100°C .

Soluble in water and alcohol; insoluble in ether.

Derivation: By neutralizing dilute lactic acid with calcium carbonate and evaporating the solution.

Grades: Technical; U. S. P.; B. P.

Containers: Tin cans; glass bottles.

Uses: Medicine; calcium lactophosphate.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Lactophosphate.*

Derivation: A mixture of calcium lactate, calcium acid lactate and calcium acid phosphate in variable proportions.

Color and properties: White crystals or powder.

Grades: Pure.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Linoleate* $\text{Ca}(\text{C}_{18}\text{H}_{31}\text{O}_2)_2$.

Color and properties: White, amorphous powder.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of solutions of calcium chloride and sodium linoleate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Waterproofing compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium-Magnesium Chloride*

$\text{CaCl}_2 \cdot \text{MgCl}_2$.

Color and properties: White, deliquescent crystals.

Soluble in water and acids; insoluble in alcohol and ether.

Derivation: (a) A by-product in the salt industry. (b) By the action of hydrochloric acid on dolomite.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron barrels.

Uses: Same as calcium chloride.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Molybdate* CaMoO_4 .

Color and properties: White, crystalline powder.

Soluble in mineral acids; insoluble in alcohol, ether or water.

Derivation: By the fusion of calcium oxide and a molybdenum ore.

Grades: Technical.

Containers: Wooden barrels.

Uses: Molybdic acid.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Nitrate* $\text{Ca}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$.

Color and properties: White, deliquescent mass.

Constants: Specific gravity 1.82; melting-point 42°C ; boiling-point 132°C .

Soluble in water and alcohol.

Derivation: By the action of nitric acid on calcium carbonate.

Method of purification: Crystallization.

Grades: Technical; pure.

Containers: Wooden kegs; glass bottles.

Uses: Pyrotechnics.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Calcium Ortho-phosphate. See Calcium phosphate, Tribasic.

Calcium Ortho-tungstate. See Calcium tungstate.

Calcium Oxide* (Lime, Burnt lime; Calx) CaO .

Color and properties: White, hard lumps, gradually crumbling on exposure to moist air.

Constants: Specific gravity 3.15-3.40; melting-point 2570°C .

Soluble in acid; very slightly soluble in water, uniting to form calcium hydroxide.

Derivation: Calcium carbonate is roasted in kilns until all of the carbon dioxide is driven off.

Impurities: Calcium carbonate magnesium oxide; iron; aluminum.

Grades: Technical; chemical lime; agricultural lime; building lime.

Containers: Wooden barrels; bags; freight cars.

Uses: Slaked lime; leather industry; manufacture of heavy chemicals; building; metallurgy; organic synthesis; rubber industry.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Calcium Perborate* CaBO_3 .

Color and properties: Gray-white lumps.

Derivation: From the mineral colemanite.

Soluble in acids.

Grades: Crude.

Containers: Freight cars.

Uses: Borax; boric acid.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Permanganate*

$\text{Ca}(\text{MnO}_4) \cdot 2.4\text{H}_2\text{O}$.

Color and properties: Violet crystals. Keep well stoppered.

Soluble in water and ammonia.

Derivation: By mixing pyrolusite and calcium hydroxide, evaporating to dryness and calcining at red heat with access of air. The manganate formed is changed into permanganate by dissolving the melt and passing carbon dioxide into the solution, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; pure.

Containers: Wooden barrels; tins; glass bottles.

Uses: • Textile industry; sterilizing water; dentistry; medicine; disinfectant.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Calcium Peroxide* (Calcium superoxide)

$\text{CaO}_2 \cdot 8\text{H}_2\text{O}$.

Color and properties: Yellow, crystalline powder.

Constants: Melting-point: Loses $8\text{H}_2\text{O}$ at 130°C .

Slightly soluble in water.

Derivation: By the interaction of solutions of a calcium salt and sodium peroxide, with subsequent crystallization.

Grades: Technical.

Containers: Iron canisters; tins; glass bottles.

Uses: Medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Calcium Phenolsulfonate* (Calcium sul-

focarbolate; Calcium sulfophenate; Calcium sulfophenylate)

$\text{Ca}(\text{C}_6\text{H}_4\text{OHSO}_3) \cdot 2.5\text{H}_2\text{O}$.

Color and properties: White, crystalline powder.

Derivation: By the action of phenolsulfonic acid on calcium hydroxide.

Grades: Technical.

Containers: Wooden kegs; tins.

Uses: Disinfectant.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Phosphate, Acid. See Calcium phosphate, Monobasic.

Calcium Phosphate, Dibasic* (Dicalcium ortho-phosphate; Bicalcic phosphate; Calcium phosphate, Secondary; Calcium phosphate, Bibasic)

$\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$.

Color and properties: White, crystalline powder.

Constants: Specific gravity 2.306; melting-point: Decomposes.

Soluble in acid; insoluble in water and alcohol.

Derivation: By the interaction of solutions of a calcium salt and sodium diphosphate.

Grades: Technical; B. P.

Containers: Tins; boxes; glass bottles.

Uses: Medicine; dentistry.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Phosphate, Monobasic* (Calcium biphosphate; Acid calcium phosphate; Calcium phosphate, Primary; Monocalcium phosphate; Acid phosphate; Superphosphate)

$\text{CaH}_2(\text{PO}_4) \cdot 2.2\text{H}_2\text{O}$.

Color and properties: Colorless, pearly scales; deliquescent in air.

Constants: Specific gravity 2.220; melting-point: Loses $11\text{H}_2\text{O}$ at 100°C ;

boiling-point: Decomposes at 200°C . Soluble in water and acids.

Derivation: By decomposing rock phosphate (calcium tribasic phosphate) with sulfuric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Baking powder; fertilizer.
Fire hazard: None.
Railroad shipping regulations: None.

Calcium Phosphate, Precipitated. See Calcium phosphate, Tribasic.

Calcium Phosphate, Primary. See Calcium phosphate, Monobasic.

Calcium Phosphate, Secondary. See Calcium phosphate, Dibasic.

Calcium Phosphate, Tertiary. See Calcium phosphate, Tribasic.

Calcium Phosphate, Tribasic* (Precipitated calcium phosphate; Tricalcium ortho-phosphate; Tricalcic phosphate; Calcium phosphate, Tertiary)
 $\text{Ca}_3(\text{PO}_4)_2$.

Color and properties: White, amorphous powder.

Constants: Specific gravity 3.18; melting-point 1550°C .

Soluble in acids; insoluble in water and alcohol.

Derivation: (a) By the interaction of solutions of a calcium salt and sodium triphosphate. (b) From bone ash.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Medicine; source of phosphorus; polishing powder; ceramics; porcelain; enameling; manufacturing milk glass.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Phosphide (Phosphor)

Ca_2P_2 .

Color and properties: Gray masses; decomposes on contact with water generating hydrogen phosphide, which takes fire in air.

Constants: Specific gravity 2.51.

Insoluble in alcohol and ether.

Derivation: By heating calcium phosphide and aluminum.

Grades: Technical.

Containers: Iron canisters.

Uses: Signal fires.
Fire hazard: Dangerous.
Railroad shipping regulations: Yellow label.

Calcium Resinate* $\text{Ca}(\text{C}_{44}\text{H}_{62}\text{O}_4)_2$.

Color and properties: Yellowish-white, amorphous powder.

Soluble in acid; insoluble in water.

Derivation: By boiling calcium hydroxide with rosin and filtering.

Grades: Technical.

Containers: Wooden barrels.

Uses: Waterproofing; manufacturing paint driers.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Calcium Silicofluoride* CaSiF_6 .

Color and properties: White, crystalline powder.

Constants: Specific gravity 2.662.

Very slightly soluble in water.

Derivation: By the action hydrosilicofluoric acid on calcium carbonate and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Stearate* $\text{Ca}(\text{C}_{18}\text{H}_{35}\text{O}_2)_2$.

Color and properties: White powder. Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of sodium stearate and calcium chloride and filtration.

Grades: Technical.

Containers: Wooden barrels.

Uses: Waterproofing.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Sulfate* (Plaster of Paris; Gypsum) (a) CaSO_4 . (b) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$

Color and properties: White powder.

Constants: Specific gravity: (a) 2.964;

(b) 2.32; melting-point: (a) 1360°C. Insoluble in water.

Derivation: (a) Found in large quantities in nature as anhydrite, CaSO_4 . (b) The dihydrate, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, occurs in granular masses. Gypsum is a perfectly crystallized form of this salt. (c) As by-product in many industrial operations.

Grades: Technical.

Containers: Barrels; freight cars; bags.

Uses: Interior decoration (stucco); white pigment; polishing powder; artificial ivory; surface-coating paper; cements, especially "Keene's cement."

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Sulfate, Hydrated. See Calcium sulfate.

Calcium Sulfide* (Calcic liver of sulfur) CaS .

Color and properties: Light-gray cubes.

Constants: Specific gravity 2.8.

Soluble in acids; slightly soluble in water.

Derivation: By strongly heating pulverized calcium sulfate and charcoal.

Grades: Technical; B. P.

Containers: Iron barrels.

Uses: Luminous paint; medicine; depilatory; preparation of arsenic-free hydrogen sulfide.

Fire hazard: None.

Railroad shipping regulations: None

Calcium Sulfide, Crude. See Lime, Sulfurated.

Calcium Sulfite* $\text{CaSO}_3 \cdot 2\text{H}_2\text{O}$.

Color and properties: White powder. Soluble in sulfurous acid; slightly soluble in water.

Derivation: By the action of sulfurous acid on calcium carbonate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron drums.

Uses: Disinfectant; antichlor; preservative; cellulose industries.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Sulfocarbolate. See Calcium phenolsulfonate.

Calcium Sulfophenate. See Calcium phenolsulfonate.

Calcium Sulfophenylate. See Calcium phenolsulfonate.

Calcium Superoxide. See Calcium peroxide.

Calcium Superphosphate. See Calcium phosphate, Monobasic.

Calcium Tartrate. $\text{CaC}_4\text{H}_4\text{O}_6 \cdot \text{H}_2\text{O}$.

Color and properties: White, crystalline powder.

Soluble in acids; insoluble in water.

Derivation: By the interaction of a calcium salt and crude cream of tartar.

Grades: Technical.

Containers: Wooden kegs.

Uses: Tartaric acid.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Tungstate* (Calcium wolframate) CaWO_4 .

Color and properties: Shining, crystalline scales.

Constants: Specific gravity 6.062.

Soluble in ammonium chloride; insoluble in water.

Derivation: By the interaction of calcium chloride and sodium tungstate.

Grades: Technical.

Containers: Wooden barrels.

Uses: Luminous paint.

Fire hazard: None.

Railroad shipping regulations: None.

Calcium Wolframate. See Calcium tungstate.

Calcspar. See Calcite.

Caledonite. A green basic sulfate of lead and copper of uncertain composition. California.

Calendula* (Marigold, Mary-bud, Gold-bloom).

Derivation: Dried florets of *Calendula officinalis*.

Habitat: Southern Europe and Levant; cultivated everywhere.

Grades: Technical; U. S. P.

Containers: Boxes.

Uses: Medicine; coloring butter; adulterant for saffron.

Fire hazard: None.

Railroad shipping regulations: None

Californite. A compact, massive vesuvianite, used as an ornamental stone. California.

Calmus. See Calamus.

Calomel. See Mercurous chloride.

Calomel, Colloidal. See Calomelol.

Calomel, Soluble. See Calomelol.

Calomelol* (Colloidal calomel; Soluble calomel).

Color and properties: Whitish-gray, odorless, tasteless powder.

Soluble in water, alcohol, ether and benzol.

Derivation: 80 per cent calomel and 20 per cent albuminoids.

Grades: Technical.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calumba (Columbo).

Derivation: Root of *Jateorhiza palmata*.

Habitat: Eastern Africa

Grades: Technical; U. S. P.; B. P.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Calumbæ Radix, B. P. See Caluniba

Calx, U. S. P., B. P. See Calcium oxide.

Calx Chlorinata, U. S. P., B. P. See Calcium hypochlorite.

Calx Sulfurata, B. P. See Lime, sulfurated.

Cam-wood. See Logwood.

Cambogia, U. S. P. See Gamboge, page 505.

Camgainba. See Manaca.

Camomile Oil. See Chamomile oil.

Camphene* $C_{10}H_{16}$.

Color and properties: Colorless crystals.

Constants: Specific gravity 0.8446; melting-point 49.5°C ; boiling-point 157°C .

Soluble in ether; slightly soluble in alcohol; insoluble in water.

Derivation: (a) By heating pinene hydrochloride with alkalis, aniline or alkali salts, such as sodium acetate. (b) A constituent of certain essential oils.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Medicine; manufacture of synthetic camphor; camphor substitute.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Camphor (Gum camphor; Formosa camphor; Japan camphor; Laurel camphor) $C_{10}H_{16}CO$.

Color and properties: White, translucent masses, easily broken.

Constants: Specific gravity 0.986-0.996; melting-point 175°C ; boiling-point 204°C .

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: From the wood of the

- camphor laurel tree (*Cinnamomum camphora*), native in Japan, China, and Formosa, by distillation. Also made synthetically from turpentine. Method of purification: Recrystallization and sublimation. Grades: Technical; synthetic; U. S. P.; B. P. Containers: Tins; wooden kegs. Uses: Medicine; celluloid, pyrotechnics, tooth powder; lacquers; moth preventive. Fire hazard: Dangerous. Railroad shipping regulations: Yellow label.
- Camphor, Alant.** See Helenin.
- Camphor, Artificial.** See Terpene hydrochloride.
- Camphor, Baras.** See Borneol.
- Camphor, Benzoated.***
Derivation: Mixture of benzoic acid and camphor.
Color and properties: White powder. Soluble in alcohol, ether and chloroform.
Grades: Technical.
Containers: Tins.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.
- Camphor, Bitter Almond Oil.** See Gum benzoin
- Camphor, Borneo.** See Borneol.
- Camphor, Bromated.** See Camphor monobromate.
- Camphor, Brominated.** See Camphor monobromate.
- Camphor, Cantharides.** See Cantharidin.
- Camphor, Elecampane.** See Helenin.
- Camphor, Formosa.** See Camphor.
- Camphor, Gum.** See Camphor.

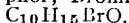
Camphor, Inula. See Helenin.

Camphor, Japan. See Camphor.

Camphor, Laurel. See Camphor.

Camphor, Malayan. See Borneol.

Camphor Monobromate* (Bromocamphor; Brominated camphor)



Color and properties: Colorless crystals.

Constants: Melting-point 76°C .; boiling-point 274°C .

Soluble in alcohol, ether, chloroform and oils; insoluble in water.

Derivation: By heating camphor with bromine.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Camphor Oil*

Color and properties: Light, colorless liquid; characteristic odor.

Chief known constituents: Pinene, saffrole, camphor, cineol and phellandrene.

Constants: Specific gravity 0.870-1.040; optical rotation $+12$ to $+32$.

Soluble in alcohol, ether and chloroform.

Derivation: By fractional distillation of crude camphor oil (*Cinnamomum camphora*).

Method of purification: Rectification.

Grades: Technical, heavy, and light.

Containers: Tins; glass bottles.

Uses: Medicine; illumination; source of saffrole.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Camphor, Thyme. See Thymol.

Camphor-wood Oil.

Color and properties: Yellow, crystalline mass; liquid at higher temperatures.

Chief known constituent: Apiol.
Constants: Specific gravity 1.155; optical rotation +2.7.
Soluble in alcohol, ether and chloroform.
Derivation: By dry distillation of the wood of the camphor tree, *Dryobalanops aromatica*.
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine; perfumery.
Fire hazard: None.
Railroad shipping regulations: None.

Camphor, Peppermint. See Menthol.

Camphor, Sumatra. See Borneol.

Camphor, Tonka Bean. See Coumarin.

Camphora, U. S. P., B. P. See Camphor.

Camphora Monobromata, U. S. P. See Camphor monobromate.

Camphoric Acid. See Acid camphoric.

Canada Balsam. See Balsam, Canada.

Canada Snake-root Oil. See Asarum canadense oil.

Canada Turpentine. See Balsam, Canada.

Canadian Hemp. See Apocynum.

Canadol. See Petroleum ether.

Cananga Oil, Java. (Ilang-ilang oil.)
Color and properties: Yellow essential oil; agreeable odor.
Chief known constituents: Esters of geraniol and linalol.
Constants: Specific gravity 0.896-0.942; optical rotation -27 to -87; refractive index 1.4788-1.5082.
Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the flowers of *Cananga odorata*.
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine; perfumery.
Fire hazard: None.
Railroad shipping regulations: None.

Canarium. See Gum elemi.

Candelilla Wax.*

Color and properties: Yellowish-brown, opaque to translucent solid wax.
Constants: Specific gravity 0.983; melting-point 67°-68°C.; saponification value 65; iodine number 37; refractive index 1.4555.
Derivation: Found coating the entire surface of the wild candelilla plant of Mexico from which it is obtained by immersing the plant in boiling water, and skimming off the wax which rises to the surface of the water.
Method of purification: Treatment with sulfuric acid or niter cake.
Impurities: Bark fragments; etc.
Grades: Technical.
Containers: Bags; boxes.
Uses: Leather dressing; furniture polishes; shoe polishes; candle manufacture; cements; varnishes; substitute for carnauba wax and beeswax.
Fire hazard: None.
Railroad shipping regulations: None.

Candleberry. See Myrica.

Candle-nut Oil. See Lumbang oil.

Candle Pitch. See Stearin pitch, page 509

Candle-tar. See Stearin pitch, page 509.

Cane Sugar. See Sugar, Cane.

Canella Alba* (White cinnamon; False Winter's bark; Bahama white wood; Wild canilla).
Derivation: Bark of *Canella alba*.
Habitat: West Indies and Florida.
Grades: Technical.
Containers: Bales.

Uses: Medicine; condiment; addition to smoking tobacco.
Fire hazard: None.
Railroad shipping regulations: None.

Canella Oil.

Color and properties: Colorless oil; spicy odor and taste.
Chief known constituents: Eugenol; cineol; caryophyllene.
Constants: Specific gravity 0.920-0.935; optical rotation +1°8'.
Soluble in alcohol, ether and chloroform.
Derivation: Distilled from the bark of *Canella alba*.
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Canna (Common canna; Indian shot; Tous-les-mois).

Derivation: Root of *Canna indica*.
Habitat: Europe; widely distributed in the tropics.
Grades: Technical.
Containers: Bales.
Uses: Medicine; source of starch.
Fire hazard: None.
Railroad shipping regulations: None.

Cannabis Indica* (Indian hemp; Indian cannabis).

Derivation: Dried flowering tops of *cannabis sativa*, gathered while yet undeveloped and carrying the whole of their natural resin.
Habitat: Persia, East India; cultivated in Europe, Asia and Western U. S.
Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine; corn removers.
Fire hazard: None.
Railroad shipping regulations: None.

Cantharides (Spanish fly; Blistering fly; Blistering beetle).

Color and properties: Grayish-brown powder, containing glossy green particles.

Derivation: The dried beetle, *Cantharis vesicatoria*.

Habitat: Southern and Central Europe.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; hair tonics.

Fire hazard: None.

Railroad shipping regulations: None.

Cantharidin* (*Cantharides* camphor; Lactone of cantharidic acid)
 $C_{10}H_{12}O_4$.

Color and properties: Colorless, crystalline scales.

Constants: Melting-point 218°C.

Soluble in alcohol, ether, chloroform and benzol; insoluble in water.

Derivation: From *Cantharis vesicatoria*.

Method of purification: Crystallization.

Grades: Technical; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cantharidinum, B. P. See *Cantharidin*.

Cantharis, U. S. P., B. P. See *Cantharides*.

Caoutchouc. See page 503.

Caprylic Acid. See *Acid caprylic*.

Caproic Acid. See *Acid caproic*.

Capronic Acid. See *Acid caproic*.

Caproyl Hydride. See *Hexane*.

Caprylic Acid. See *Acid caprylic*.

Caprylic Alcohol* (Capryl alcohol; Secondary octylic alcohol; Octoic alcohol) $CH_3(CH_2)_5CHOHCH_3$.

Colorless and properties: Colorless oily liquid; pungent aromatic odor.

Constants: Specific gravity 0.832; boiling-point 170°C.

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) Normal caprylic alcohol as the butyrate is the chief constituent of parsley oil. (b) Secondary caprylic alcohol (methylhexylcarbinol) is obtained by distilling castor oil with an excess of caustic alkali.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Caprylic Aldehyde* (Octoic aldehyde; $C_7H_{15}ClHO$).

Color and properties: Colorless liquid; pungent odor.

Constants: Specific gravity 0.819; melting-point -16° C.; boiling-point, 154° C.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By destructive distillation of castor oil.

Method of purification: Through its compound with sodium bisulfite.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Capsici Fructus, B. P. See Capsicum.

Capsicum* (Cayenne pepper; African pepper; Chillies; Bird pepper; Red pepper).

Derivation: Dried ripe fruit of *Capsicum fastigiatum*.

Habitat: Southern India; cultivated extensively in the tropics.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Caramel (Sugar coloring; Burnt sugar).

Color and properties: Dark-brown, deliquescent mass or semi-solid; bitter taste.

Derivation: Obtained by carefully heating sugar.

Soluble in water.

Grades: Technical; also sold in solution.

Containers: Barrels.

Uses: Coloring liquids; confectionery; tobacco flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Caraway* (*Carum*).

Derivation: Dried seed of *Carum carvi*.

Habitat: Europe, Central and Western Asia; cultivated in England, Russia and U. S.

Grades: Technical; U. S. P.

Containers: Boxes.

Uses: Medicine; flavoring; liqueurs; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Caraway Oil (*Caraway-seed oil*).

Color and properties: Colorless or pale-yellow, thin, liquid; characteristic odor; mild, spicy taste.

Chief known constituents: Carvone and dextro-limonene.

Constants: Specific gravity 0.907-0.915; boiling-point 175°-230°C.; optical rotation +70 to +85; refractive index 1.4867-1.4970.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from caraway seed.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Caraway-seed Oil. See Caraway oil.

Carbamide. See Urea.

Carbamide Carbonate. Guanidine carbonate.

Carbanilide. See Diphenylurea.

Carbazole* (Diphenylimide; Iminophenyl) (C_6H_4)₂NH.

Color and properties: White to reddish-white crystals.

Constants: Melting-point 238°C .; boiling-point 351.5°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: From crude anthracene cake by selective solution of the phenanthrene with crude solvent naphtha, removal of the anthracene by conversion into a sulfonic derivative and extraction by means of water.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Carbazotic Acid, B. P. See Acid picric.

Carbide. See Calcium carbide.

Carbolic Acid. See Phenol.

Carbo Ligni, U. S. P., B. P. See Charcoal, Wood.

Carbona.* A proprietary cleaning fluid composed of benzine and carbon tetrachloride.

Carbon Bisulfide* (Carbon disulfide) CS_2 .

Color and properties: Clear, colorless, inflammable liquid; almost odorless when pure; the commercial article has a strong disagreeable odor; poisonous.

Constants: Specific gravity 1.2927; melting-point -111.6°C .; boiling-point 46.25°C .; flash-point 149.5°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: (a) By the action of sulfur vapors on red-hot carbon, the vapors formed being condensed.

(b) By heating sulfur and carbon in an electric furnace and condensing the carbon bisulfide vapors.

Method of purification: Treatment with lead acetate followed by lime water with subsequent distillation.

Impurities: Sulfur compounds.

Grades: Technical.

Containers: Iron drums.

Uses: Solvent; varnishes; matches; preservative; insecticide, manufacture of carbon tetrachloride.

Fire hazard: Dangerous.

Railroad shipping regulations: Cannot be shipped by express.

Carbon Black. See Charcoal, Animal.

Carbon, Decolorizing. See Charcoal, Animal, and Wood.

Carbon, Deodorizing. See Charcoal, Animal, and Wood.

Carbon Dichloride. See Tetrachloroethylene.

Carbon Dioxide* (Carbonic acid) CO_2 .

Color and properties: Colorless, odorless gas or heavy, volatile, colorless liquid or white snow-like solid.

Constants: Gas: Specific gravity 1.53;

Liquid: Specific gravity 1.057; melting-point -65°C .; boiling-point

-78.2°C .; Solid: Specific gravity 1.56

Soluble in water.

Derivation: Carbon dioxide gas generated by combustion of carbon in any form; by fermentation (e. g. in breweries) or by action of acids on marble, limestone or dolomite is purified, collected and subjected to pressure.

Grades: Technical.

Containers: When liquid, steel cylinders.

Uses: Aerating water, wine, beer, etc.; manufacture of soft drinks; fire extinguisher; refrigeration; chemical reagent.

Fire hazard: None.

Railroad shipping regulations: Green label.

Carbon Disulphidum, B. P. See Carbon bisulfide.

Carbon Hexachloride. See Carbon trichloride.

Carbon, Mineral. See Graphite.

Carbon Tetrachloride* (Tetrachloromethane: Perchloromethane) CCl_4 .

Color and properties: Light, colorless liquid, peculiar odor, yielding heavy vapors; non-inflammable; poisonous!

Constants: Specific gravity 1.5835; melting-point -22.95°C .; boiling-point 76.74°C .

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By the interaction of carbon bisulfide and chlorine in presence of a catalyzer.

Method of purification: Treatment with caustic alkali solution to remove sulfur chloride, followed by rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Solvent; fire extinguishers; cleaning compounds; rendering benzene non-inflammable.

Fire hazard: None.

Railroad shipping regulations: None.

Carbon Trichloride* (Hexachloroethane: Perchloroethane; Carbon hexachloride; Tetrachloroethylene dichloride) CCl_3CCl_3 .

Color and properties: Colorless crystals; camphor-like odor.

Constants: Specific gravity 1.9988; melting-point 185°C .; boiling-point 185°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the action of sunshine on chlorine and ethyl and ethylene chlorides.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Carbonic Acid. See Carbon dioxide.

Carbonyl Chloride* (Phosgene) COCl_2 .

Color and properties: Colorless, volatile liquid; extremely poisonous.

Constants: Specific gravity 1.392; melting-point -75°C .; boiling-point 8.2°C .

Derivation: By passing a mixture of carbon monoxide and chlorine through charcoal with or without a catalyst.

Grades: Technical.

Containers: Steel cylinders.

Uses: Lethal gas for warfare; bleaching sand for glass manufacture; chlorinating agent; dyestuff manufacture (methyl violet).

Fire hazard: None.

Railroad shipping regulations: Cannot be shipped by express.

Carborundum* (Silicon carbide) SiC .

Color and properties: Green to bluish-black, iridescent, porous, crystalline, sharp-grained platelets or mass.

Constants: Specific gravity 3.12-3.20.

Derivation: By heating a mixture of coke, sand, shale and sawdust in the electric furnace.

Grades: Grits, from 10 mesh to finest powders.

Containers: Kegs.

Uses: Abrasive; grindstones; hones; sharpening-stones; anti-slip pavements, grinding wheels, refractories.

Fire hazard: None.

Railroad shipping regulations: None.

Cardamom.

Derivation: Dried, nearly ripe fruit of *Elettaria repens*.

Habitat: Malabar; cultivated in India and Ceylon.

Grades: Technical; U. S. P.

Containers: Bags; boxes.

Uses: Medicine; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Cardamom Oil, Ceylon.

Color and properties: Pale-yellow, essential oil; strongly aromatic, camphoraceous odor and taste.

Chief known constituents: Terpinene, cineol, dipentene, limonene and acetic ester.

Constants: Specific gravity 0.895-0.905; refractive index 1.460 to 1.470; optical rotation $+12^\circ$ to $+15^\circ$.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the seeds of *Elatteria repens*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Flavoring; liqueurs; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cardamom Oil, Malabar.

Color and properties: Pale-yellow, essential oil; strongly aromatic, camphoraceous odor and taste.

Chief known constituent: Cineol.

Constants: Specific gravity 0.933 to 0.943; optical rotation +26 to +34.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the seed of a species of *Elatteria*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

Cardamom Oil, Siam.

Color and properties: Pale-yellow essential oil; strongly aromatic, camphoraceous odor and taste.

Chief known constituents: Borneol, camphor, cineol and sesquiterpenes.

Constants: Optical rotation +38°4'; refractive index 1.4339.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the seed of a species of *Elatteria*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cardomomi Semina, U. S. P., B. P. See Cardamom.

Carex* (Sand sedge, Sand star; Red couch-grass; German sarsaparilla).

Derivation: The rhizome or *Carex arenaria*.

Habitat: Europe, adventitious in United States.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Carica Papaya. See Papaw.

Carmine.

Derivation: Pigment from dried female of *Coccus cacti*.

Color and properties: Small, brilliant, red lumps.

Soluble in water and alcohol.

Grades: Technical.

Containers: Tins.

Uses: Dyes, inks, indicator in chemical analysis; coloring food materials, medicines, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Carminic Acid. See Acid carminic.

Carnauba Wax (Brazil wax).

Color and properties: Hard, amorphous, yellowish-green or light-yellow, brittle lumps; peculiar, agreeable odor.

Constants: Specific gravity 0.995°C.; melting-point 84°-86°C.

Soluble in ether, boiling alcohol and alkalis; insoluble in water.

Derivation: An exudation from leaves of the wax palm *Copernicia cerifera*.

Grades: Technical.

Containers: Bags; boxes.

Uses: Substitute for beeswax, shoe-polishes, candles, leather finishes, varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

Carnotite. A canary-yellow mineral, somewhat variable in composition, containing uranium and vanadium, with either or both lime and potash and small proportions of various rare elements. Is ordinarily a mixture of true carnotite, $2\text{UO}_3 \cdot \text{V}_2\text{O}_5 \cdot \text{K}_2\text{O} \cdot x\text{H}_2\text{O}$, and tyuyamunite, $2\text{UO}_3 \cdot \text{V}_2\text{O}_5 \cdot \text{CaO} \cdot x\text{H}_2\text{O}$. Is radioactive and is the chief source of

radium. Colorado, Arizona, Pennsylvania and Utah.

Carolina Pink. See *Spigelia*.

Carpaine $C_{14}H_{25}NO_2$.

Color and properties: White crystalline alkaloid.

Constants: Melting-point $121^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By extraction from the leaves of *Carica papaya*.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Carpaine Hydrochloride

$C_{14}H_{25}NO_2 \cdot HCl$.

Color and properties: White crystals.

Constants: Melting-point $225^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By solution of carpaine in hydrochloric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Carrageen. See *Chondrus*.

Carron Oil.* A mixture of linseed or cotton-seed oil with lime water, used in the treatment of burns.

Carthamus* (Safflower, African saffron, Thistle saffron, American saffron, Dejer's saffron, False saffron, Bastard saffron).

Derivation: Florets of *Carthamus tinctorius*.

Habitat: Levant and Orient; cultivated extensively in Europe and America.

Grades: Technical.

Containers: Bales.

Uses: Medicine; dyestuff; coloring cosmetics.

Fire hazard: None.

Railroad shipping regulations: None.

Cartier Hydrometer. Standard in Spain for the alcoholic content of liquors.

Carui Fructus, B. P. See *Caraway*.

Carum, U. S. P., B. P. See *Caraway*.

Carvol. See *Carvone*.

Carvone $C_{10}H_{14}O$.

Color and properties: Pale yellowish or colorless liquid; fine carawaylike odor.

Constants: Specific gravity 0.960; boiling-point $230^{\circ}C$.

Soluble in alcohol, ether and chloroform.

Derivation: From caraway oil.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Caryophyllic Acid. See *Eugenol*.

Caryophyllus (Cloves).

Derivation: Dried flower-buds of *Eugenia aromatica*.

Habitat: Molucca Islands, Zanzibar, Sumatra, South America, West Indies, etc.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; manufacturing clove oil.

Fire hazard: None.

Railroad shipping regulations: None.

Cascara Amarga (Honduras bark).

Derivation: Bark of *Picramnia peltandra*.

Habitat: West Indies and Mexico.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cascara Sagrada, Bark (Sacred bark, Chittam bark, Chittam bark, Chittim bark, Persian bark, Bear-berry, Bear-wood).

Derivation: Bark of *Rhamnus purshiana*.

Habitat: Idaho and California.

Properties: The bark loses its cathartic properties on being kept for 1 year.

Grades: Technical; U. S. P.

Containers: Bags, bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cascarilla (*Eleuthera* bark, Sweet-wood bark).

Derivation: Bark of *Croton eluteria*.

Habitat: Bahamas, Cuba and Hayti.

Grades: Technical; U. S. P.

Containers: Bales.

Uses: Medicine; tobacco flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Casein* .

Color and properties: White to yellowish albuminoid produced as a granular powder or amorphous lumps.

Soluble in alkalis, alkaline carbonates and moderately strong acids; insoluble in water, alcohol and ether.

Derivation: (a) By precipitation from milk by means of very dilute acids in excess. (b) By precipitation by solutions of salts of heavy metals, yielding a caseinogenate of the respective metal. (c) By means of an enzyme, such as rennet, yielding calcium para-caseinogenate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Food (cheese); leather finishing; adhesives; sizing paper; water paints; varnishes; substitute for albumin, celluloid, shellac, gelatin, gums, horn and hard rubber; manufacturing ornaments; films.

Fire hazard: None.

Railroad shipping regulations: None.

Casein Ammonia. See *Eucasin*.

Cashew-nut Oil. See *Cashew oil*.

Cashew Oil (*Cashew-nut oil*).

Color and properties: Clear, pale yellow, colorless, fixed oil.

Constants: Saponification value 179.84; iodine number 60.6.

Soluble in alcohol, ether, benzol and carbon bisulfide; insoluble in water.

Derivation: From the cashew nut, *Anacardium occidentale*, by expression.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cashoo. See *Catechu*.

Cassava Starch* (*Arrowroot*).

Derivation: From the roots of several species of *manihot*, by heating the damp starch in shallow pans, the granules burst and adhere together, forming irregularly shaped, translucent kernels, known as tapioca.

Grades: Technical.

Containers: Burlap bags; wooden barrels.

Uses: Foodstuffs; laundry starches; adhesives.

Fire hazard: None.

Railroad shipping regulations: None.

Cassel's Green. See *Barium manganate*.

Cassella's Acid. See *Acid beta-naphthol-sulfonic*, 2-7.

Cassela's Acid F. See *Acid beta-naphthylaminemonosulfonic*.

Cassia Bark. See *Cinnamon*, *Cassia*.

Cassia Fistula (*Purging cassia*, *Drumstick*, *Indian Jaburnum*, *Pudding pipe*, *Pudding stick*).

Derivation: Dried fruit of *Cassia fistula*.

Habitat: Upper Egypt and East India; cultivated in tropical America and Africa.

Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine.

Cassia Oil (Cinnamon Oil, Chinese).

Color and properties: Yellow or brownish liquid.

Chief known constituent: Cinnamic aldehyde (Not less than 80 per cent).

Constants: Specific gravity 1.045-1.063; optical rotation +1 to -1; boiling-point 240-260°C.; refractive index 1.585-1.605.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the bark of a species of *Cinnamomum* grown in China.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Flavoring; perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Cassia Fructus, B. P. See *Cassia fistula*.

Cassia Pulpa, B. P. *Cassia* pulp.

Cassiterite. Natural tin oxide, SnO_2 . Contains 79 per cent tin. The source of practically all the tin now used.

California, Colorado, Connecticut, Georgia, Idaho, Maine, New Hampshire, North Carolina, South Carolina, South Dakota, Texas, Virginia, Wales, Washington and Wyoming.

Cassius' Purple. See Gold-tin purple.

Castanha Oil (Brazil-nut oil)

Color and properties: Pale, yellow, odorless, fixed oil.

Constants: Specific gravity 0.9180; melting-point 0.4°C.; saponification value 193.4; iodine number 106.22.

Soluble in ether, carbon bisulfide and benzol; insoluble in water.

Derivation: From the brazil-nut, *Bertholletia excelsa*, by expression.

Grades: Technical.

Containers: Tins; iron drums.

Uses: Perfumery; soap; food; illumination.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Cast-iron. See Iron.

Castor* (Canadian beaver; Siberian beaver).

Derivation: Dried preputial follicles with their secretions of the common beaver, *Castor fiber*.

Grades: Technical.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Castor Bean. See *Ricinus*.

Castor Oil* (*Ricinus* oil).

Color and properties: Yellow to yellowish-brown liquid.

Constants: Specific gravity 0.960-0.970; saponification value 178; iodine value 85; acid value 19.21.

Soluble in alcohol, ether, benzol, chloroform and carbon bisulfide.

Derivation: From the seeds of *Ricinus communis*. They are cold pressed for the first grade of medicinal oil and hot pressed for the common qualities, about 40 per cent of the oil being obtained.

Grades: Technical; U. S. P.

Containers: Large cans.

Uses: Preparation of Turkey red oil; lubricant for aircraft engines; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cat's Hair. See *Euphorbia pilulifera*.

Catechol. See *Pyrocatechin*.

Catechu (Cutch, *Terra japonica*).

Derivation: From the wood and pods of *Acacia catechu* and from the betel nut, the fruit of *Areca catechu*, a spe-

cies of the palm tree. Both are natives of India.
Grades: Extract: 25 per cent Tannin; Solid: 50 per cent Tannin.
Containers: Extract: Wooden barrels; Solid: Boxes.
Uses: Textile dyeing; Tanning industry.
Fire hazard: None.
Railroad shipping regulations: None.

Catechu Nigrum, B. P. See Catechu.

Catlinite (Indian pipestone). A red clay found in southwestern Minnesota and formerly used by the Indians for making pipes. Soft when freshly quarried, hardens on exposure to air.

Catmint. See Nepeta, page 506.

Catnip. See Nepeta, page 506.

Caulophyllum* (Blue cohosh, Squaw-root).
Derivation: Rhizome and roots of *Caulophyllum thalictroides*.
Habitat: United States and Japan.
Grades: Technical.
Containers: Bales.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Caustic. When used alone usually alludes to caustic soda, sodium hydroxide.

Caustic Baryta. See Barium hydroxide.

Caustic Lime. See Calcium hydroxide.

Caustic, Lunar. See Silver nitrate.

Caustic Potash. See Potassium hydroxide.

Caustic Soda. See Sodium hydroxide.

Cayenne Pepper. See Capsicum.

Cedar Leaf Oil.*

Color and properties: Colorless liquid, savine-like odor.
Chief known constituents: Limonene, cadinene, borneol, bornyl esters.
Constants: Specific gravity 0.883-0.888. Soluble in alcohol, ether, and chloroform.
Derivation: Distilled from the leaves of the red cedar (*Juniperus virginiana*).
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Cedar Wood Oil.*

Color and properties: Pale-yellow or greenish-yellow liquid; characteristic agreeable odor; poisonous.
Chief known constituents: Cedrene; cedar camphor.
Constants: Specific gravity 0.945-0.960; optical rotation -30 to -40; refractive index 1.498 to 1.503.
Soluble in alcohol, ether and chloroform.
Derivation: Distilled from the wood of *Juniperus virginiana*.
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles; iron drums.
Uses: Medicine; perfuming soap; scenting; insectifuge.
Fire hazard: None.
Railroad shipping regulations: None.

Cedrus (Cedar) Wood of *Cedrus libani*.
Habitat: Asia Minor.
Uses: Source of cedar oil.
Fire hazard: None.
Railroad shipping regulations: None.

Celandine. See Chelidonium.

Celery-seed Oil.*

Color and properties: Yellowish essential oil; characteristic odor; celery taste.
Chief known constituents: Limonene, phenols, sedanolide, sedanonic acid.

Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine.

Cassia Oil (Cinnamon Oil, Chinese).

Color and properties: Yellow or brownish liquid.

Chief known constituent: Cinnamic aldehyde (Not less than 80 per cent).

Constants: Specific gravity 1.045-1.063; optical rotation +1 to -1; boiling-point 240-260°C.; refractive index 1.585-1.605.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the bark of a species of *Cinnamomum* grown in China.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Flavoring; perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Cassia Fructus, B. P. See *Cassia fistula*.

Cassia Pulpa, B. P. *Cassia* pulp.

Cassiterite. Natural tin oxide, SnO_2 . Contains 79 per cent tin. The source of practically all the tin now used.

California, Colorado, Connecticut, Georgia, Idaho, Maine, New Hampshire, North Carolina, South Carolina, South Dakota, Texas, Virginia, Wales, Washington and Wyoming.

Cassius' Purple. See Gold-tin purple.

Castanha Oil (Brazil-nut oil)

Color and properties: Pale, yellow, odorless, fixed oil.

Constants: Specific gravity 0.9180; melting-point 0.4°C.; saponification value 193.4; iodine number 106.22.

Soluble in ether, carbon bisulfide and benzol; insoluble in water.

Derivation: From the brazil-nut, *Bertholletia excelsa*, by expression.

Grades: Technical.

Containers: Tins; iron drums.

Uses: Perfumery; soap; food; illumination.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Cast-iron. See Iron.

Castor* (Canadian beaver; Siberian beaver).

Derivation: Dried preputial follicles with their secretions of the common beaver, *Castor fiber*.

Grades: Technical.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Castor Bean. See *Ricinus*.

Castor Oil* (*Ricinus* oil).

Color and properties: Yellow to yellowish-brown liquid.

Constants: Specific gravity 0.960-0.970; saponification value 178; iodine value 85; acid value 19.21.

Soluble in alcohol, ether, benzol, chloroform and carbon bisulfide.

Derivation: From the seeds of *Ricinus communis*. They are cold pressed for the first grade of medicinal oil and hot pressed for the common qualities, about 40 per cent of the oil being obtained.

Grades: Technical; U. S. P.

Containers: Large cans.

Uses: Preparation of Turkey red oil; lubricant for aircraft engines; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cat's Hair. See *Euphorbia pilulifera*.

Catechol. See *Pyrocatechin*.

Catechu (Cutch, *Terra japonica*).

Derivation: From the wood and pods of *Acacia catechu* and from the betel nut, the fruit of *Areca catechu*, a spe-

cent silver. Arizona, California, Colorado, Idaho, Maine, Montana, Nevada, New Mexico, South Dakota, Utah, Washington and Wyoming.

Ceratum, U. S. P. Cerate.

Ceratum Cantharidis, U. S. P. Cantharides cerate.

Ceratum Resinae, U. S. P. Rosin cerate.

Ceresin* (Ozokerite, Earth-wax, Mineral wax, Cerosin, Cerin).

Color and properties: White, waxy cakes; odorless; tasteless.

Constants: Specific gravity 0.92-0.94; melting-point 74°C-80°C.

Soluble in alcohol, benzol, chloroform, naphtha; insoluble in water.

Derivation: Purification of ozokerite by treatment with concentrated sulfuric acid and filtration through animal charcoal.

Grades: Technical.

Containers: Boxes.

Uses: Candles; sizing; substitute for white wax.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Ceric-Ammonium Nitrate* (Cerium-ammonium nitrate)

$\text{Ce}(\text{NO}_3)_4 \cdot 2\text{NH}_4\text{NO}_3$.

Color and properties: Small prismatic, orange-red crystals.

Soluble in water and alcohol.

Derivation: By mixing solutions of cerium nitrate and ammonium nitrate, with subsequent crystallization.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs; tins.

Uses: Incandescent gas mantles.

Fire hazard: None.

Railroad shipping regulations: Yellow label.

Cerium Fluoride* (Cerium fluoride)

$\text{CeF}_4 \cdot \text{H}_2\text{O}$.

Color and properties: White, amorphous powder.

Soluble in acids; insoluble in water.

Derivation: By the interaction of solutions of cerium nitrate and sodium fluoride.

Grades: Technical.

Containers: Wooden kegs; tins.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Ceric Oxide* (Cerium dioxide, Cerium oxide) CeO_2 .

Color and properties: Pale-yellow, heavy powder.

Constants: Specific gravity 7.65.

Soluble in nitric and sulfuric acids; insoluble in water and dilute acids.

Derivation: By decomposing cerium nitrate by heat.

Impurities: Other rare metal oxides.

Grades: Technical; C. P.

Containers: Wooden kegs.

Uses: Incandescent gas mantles; ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Ceric Sulfate* (Cerium sulfate)

$\text{Ce}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$.

Color and properties: Reddish-yellow crystals.

Soluble in water.

Derivation: By the action of sulfuric acid on cerium carbonate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Boxes; glass bottles.

Uses: Reducer in photography.

Fire hazard: None.

Railroad shipping regulations: None.

Cerii Oxalas, U. S. P. See Cerous oxalate.

Cerin. See Ceresin.

Cerium.* Ce.

Color and properties: Gray, ductile, malleable metal; tarnishes in moist air.

Constants: Specific gravity 6.92; melting-point 645°C.

Soluble in acids; insoluble in water.
Derivation: (a) Reduction of the oxide by magnesium powder; (b) Electrolysis of the fused chloride.

Grades: Technical, contains considerable quantities of various of the rare earth metals.

Containers: Boxes.

Uses: Cerium salts; cerium-iron pyrophoric alloys ("misch-metall").

Fire hazard: None.

Railroad shipping regulations: None.

Cerium-Ammonium Nitrate. See Ceric-ammonium nitrate and Cerous-ammonium nitrate.

Cerium Chloride. See Cerous chloride.

Cerium Dioxide. See Ceric oxide.

Cerium Fluoride. See Ceric fluoride.

Cerium Nitrate. See Cerous nitrate.

Cerium Oxalate. See Cerous oxalate.

Cerium Oxide. See Ceric oxide.

Cerium Sulfate. See Ceric sulfate.

Cerodine. See Veratrine.

Cerous-Ammonium Nitrate* (Cerium-ammonium nitrate)

$\text{Ce}_2(\text{NO}_3)_6 \cdot 3\text{NH}_4\text{NO}_3 \cdot 10\text{H}_2\text{O}$.

Color and properties: White, transparent crystals.

Soluble in water and alcohol; insoluble in nitric acid.

Derivation: By adding ammonium hydroxide to a nitric acid solution of cerium nitrate.

Grades: Technical.

Containers: Tins.

Uses: Incandescent gas mantles.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Cerous Chloride* (Cerium chloride)

$\text{Ce}_2\text{Cl}_{14} \cdot 14\text{H}_2\text{O}$.

Color and properties: Reddish-white crystals.

Constants: Specific gravity 3.88; melting-point 848°C .

Soluble in water and alcohol.

Derivation: By the action of hydrochloric acid on cerium carbonate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Kegs.

Uses: Incandescent gas mantles.

Fire hazard: None.

Railroad shipping regulations: None.

Cerous Nitrate* (Cerium nitrate)

$\text{Ce}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$.

Color and properties: Red crystals.

Constants: Melting-point: Loses $3\text{H}_2\text{O}$ at 150°C ; boiling-point: Decomposes at 200°C .

Soluble in water and alcohol.

Derivation: By the action of nitric acid on cerium or cerium dioxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Incandescent gas mantles.

Fire hazard: None.

Railroad shipping regulations: Yellow label.

Cerous Oxalate* (Cerium oxalate)

$\text{Ce}_2(\text{C}_2\text{O}_4)_3 \cdot 9\text{H}_2\text{O}$.

Color and properties: Yellowish-white, odorless, tasteless, crystalline powder.

Constants: Melting-point: Decomposes.

Soluble in dilute sulfuric and hydrochloric acids; very slightly soluble in water; insoluble in oxalic acid solution, alkalis, alcohol and ether.

Derivation: By extraction from monazite sand with oxalic acid or with hydrochloric acid and conversion into the oxalate, followed by crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.
Containers: Wooden kegs; tins.
Uses: Medicine; isolation of the metals of the cerium group.
Fire hazard: None.
Railroad shipping regulations: None.

Ceruse. See Lead carbonate.

Cerusite. Natural lead carbonate, $\text{PbO} \cdot \text{CO}_2$. Contains 77.5 per cent lead. Arizona, Arkansas, Colorado, Connecticut, Idaho, Illinois, Iowa, Kansas, Missouri, Montana, Nevada, New Mexico, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Virginia, Washington, Wisconsin and Wyoming.

Cervantite. A natural, infusible antimony oxide, Sb_2O_4 . Idaho and New Mexico.

Cetaceum, U. S. P., B. P. See Spermaceti.

Cetin (Palmitic acid cetyl ester)

$\text{C}_{15}\text{H}_{31}\text{COOC}_{16}\text{H}_{33}$.

Color and properties: White crystalline wax-like substance. Chief constituent of commercial purified spermaceti.

Constants: Melting-point 50°C .; boiling-point 360°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By solution from spermaceti.

Grades: Technical.

Containers: Wooden boxes.

Uses: Base for ointments, cerates and emulsions; manufacture of candles, soaps, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Cetraria. See page 504.

Cetylacetic Acid. See Acid stearic.

Cetylic Acid. See Acid palmitic.

Cetylic Alcohol* (Ethal, Ethol, Cetyl alcohol, Heedecatylic alcohol, Normal

primary hexadecyl alcohol, Palmityl alcohol) $\text{C}_{16}\text{H}_{33}\text{OH}$.

Color and properties: White crystals.

Constants: Specific gravity 0.8176; melting-point 50°C .; boiling-point 344°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By saponifying spermaceti with caustic alkali.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Medicine; perfumery.

Cevadilla. See Sabadilla.

Chabert Oil.* A mixture of three parts of turpentine oil with one part of bone oil; used in medicine.

Chalcanthite. Natural copper sulfate, $\text{CuO} \cdot \text{SO}_3 \cdot 5\text{H}_2\text{O}$. Arizona, California, Colorado, Idaho, Montana, Nevada, North Carolina and Tennessee.

Chalcocite (Copper glance). A natural copper sulfide, Cu_2S . Contains 79.8 per cent copper. Arizona, California, Colorado, Connecticut, Georgia, Idaho, Maine, Maryland, Minnesota, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, Wisconsin and Wyoming.

Chalcophanite (Hydrofranklinite). A natural hydrous manganese-zinc oxide $(\text{Mn}, \text{Zn})\text{O} \cdot 2\text{MnO}_2 \cdot 2\text{H}_2\text{O}$. New Mexico.

Chalcopyrite (Copper pyrites, Yellow copper ore). A natural sulfide of copper and iron, CuFeS_2 . Contains 34.5 per cent copper. Alabama, Arizona, California, Canada, Colorado, Connecticut, Georgia, Idaho, Maine, Massachusetts, Minnesota, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota,

Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin and Wyoming.

Chalk.

A soft, compact, light-colored, natural amorphous calcium carbonate composed of the delicate skeletons of rhizopods and other marine organisms. Alabama, Iowa and Nebraska. Much of the chalk of commerce is imported from England. See also Calcium carbonate.

Chalk, Precipitated. See Calcium carbonate.

Chamomile. See Anthemis.

Chamomile Oil, German. (Camomile oil.)

Color and properties: The oil has at first a bluish color, which by exposure to light turns into green and brown; characteristic odor of chamomile; bitterish, aromatic taste.

Chief known constituent: A paraffin. Constants: Specific gravity 0.930-0.940. Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the flower heads of *Matricaria chamomilla*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Flavoring; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Chamomile Oil, Roman.

Color and properties: See Chamomile oil, German.

Chief known constituents: Esters of butyric, angelic and tiglic acids.

Constants: Specific gravity 0.905-0.915; refractive index 1.4455.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the flower heads of *Anthemis nobilis*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Charcoal, Animal* (Abaiser, Bone-black).

Derivation: By the destructive distillation of bones.

Grades: Technical.

Containers: Bags; barrels.

Uses: Decolorizing agent; filtering medium; sugar refining.

Fire hazard: None.

Railroad shipping regulations: None.

Charcoal, Vegetable. See Charcoal, Wood.

Charcoal, Wood.*

Derivation: Formerly the chief product now a by-product of the destructive distillation of wood.

Grades: Technical.

Containers: Barrels.

Uses: Decolorizing agent; filtering medium; component of ordinary gun powder; fuel; pharmacy.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Charlton White. See Lithopone.

Chaulmoogra Oil (Oleum chaulmoograe, Gynocardia oil).

Color and properties: Brownish-yellow oil or soft fat; characteristic odor; somewhat acrid taste.

Constants: Specific gravity 0.940; saponification value 198-213; iodine value 96-104; acid value 21-27.

Soluble in ether, chloroform, alcohol and carbon bisulfide.

Derivation: Expressed from the seeds of *Taraktogenos kurzii*.

Method of purification: Rectification.

Grades: Technical; B. P.

Containers: Copper flasks; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Checkerberry. See Gaultheria, page 505.

Checkerberry Oil. See Gaultheria oil.

Chelandine. See Chelidonium.

Chelene. See Ethyl chloride.

Chelidonine* $C_{20}H_{19}NO_5 \cdot H_2O$.
Color and properties: White crystalline alkaloid; poisonous.
Constants: Melting-point 135° - $136^{\circ}C$.
Soluble in alcohol and ether; insoluble in water.

Derivation: By extraction of Chelidonium majus and subsequent crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Chelidonine Hydrochloride*

$C_{21}H_{19}NO_5 \cdot HCl$.

Color and properties: White crystals. Soluble in alcohol, ether and water.

Derivation: By the action of hydrochloric acid on chelidonine.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Chelidonium* (Celandine; Chelandine; Tetterwort).

Derivation: The entire plant, Chelidonium majus.

Habitat: Europe and U. S.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Chelerythrine* $C_{19}H_{11}NO_2(OCH_3)_2$.
Color and properties: Colorless crystals; poisonous.

Constants: Melting-point $203^{\circ}C$.

Slightly soluble in alcohol and ether.

Derivation: By extraction of Chelidonium majus or Sanguinaria canadensis and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

"Chemick." A cold dilute solution of bleaching powder (Calcium hypochlorite) used in the textile industry.

Chenopodium Oil* (Oil of American wormseed; Goose-foot oil).

Color and properties: Colorless or yellowish liquid; characteristic penetrating odor; pungent and bitterish taste.

Chief known constituents: Ascaridole and cymene.

Constants: Specific gravity 0.965-0.985; optical rotation -5 to -18 .

Soluble in alcohol, ether, and chloroform.

Derivation: Distilled from the fruit of Chenopodium ambrosioides.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cherry Laurel Oil.*

Color and properties: Pale-yellow liquid; characteristic odor of oil of bitter almonds.

Chief known constituents: Benzaldehyde and hydrocyanic acid.

Constants: Specific gravity 1.054-1.066.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the leaves of Prunus lauro-cerasus.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Flavoring; liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

Chestnut Extract.*

Derivation: By leaching the bark of Castanea sativa, yielding an extract, the composition of whose tannin is unknown.

Grades: Ordinary 25 per cent tannin; clarified 25 per cent tannin.

Chlorethane. See page 504.

Chloride of Lime. See Calcium hypochlorite.

Chlorine* Cl₂.

Color and properties: Heavy, greenish-yellow gas or liquid; poisonous! Constants, gas: Specific gravity 2.491; melting-point -102°C .; boiling-point -33.6°C .

Soluble in water and alkalis.

Derivation: By the electrolysis of sodium chloride in solution. The chlorine is released at the positive electrode. The chlorine is either liquefied by compression in steel cylinders or employed at once for making bleach or bleaching powder, or for chlorinating organic substances.

Grades: Technical.

Containers: Steel cylinders.

Uses: Organic synthesis; textile bleaching liquor; water purification; chlorination; military poison gas; manufacture of hydrochloric acid.

Fire hazard: None.

Railroad shipping regulations: Green (gas) label.

Chloroacetone* (Monochloroacetone, Monochlorinated acetone)
CH3COCH2Cl

Color and properties: Colorless liquid; pungent odor.

Constants: Specific gravity 1.162; boiling-point 119°C .

Soluble in alcohol, ether and chloroform; insoluble in water.

Derivation: By the chlorination of acetone.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis; military poison gas.

Fire hazard: None.

Railroad shipping regulations: None.

Chloroazotic Acid. See Aqua regia.

Chlorobenzal. See Benzyl dichloride.

Chlorobenzol. See Chlorobenzene.

Chlorobenzene* (Monochlorobenzol)
C6H5Cl

Color and properties: Clear liquid.

Constants: Specific gravity 1.1064; melting-point -44.9°C .; boiling-point 132°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By passing dry chlorine into benzol to which a small aluminum mercury couple is added as a carrier. Action is stopped when the additional weight corresponding to the replacement of one hydrogen atom by one of chlorine. The liquid is neutralized with caustic soda, dehydrated over calcium chloride and finally recovered by distillation. (b) By passing chlorine into benzol in presence of molybdenum chloride.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; carboys.

Uses: Picric acid, dyestuffs; organic preparations

Fire hazard: None.

Railroad shipping regulations: None.

Chloroethylene Chloride. See Ethylene monochlorochloride.

Chloroform* (Trichloromethane, Methylene trichloride)
CHCl3

Color and properties: Clear, colorless, highly refractive, volatile liquid; characteristic odor; non-inflammable.

Constants: Specific gravity 1.49887; melting-point -63.2°C .; boiling-point 61.20°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: (a) By the reaction of calcium oxychloride with acetone and distillation. (b) Chloral is treated with an aqueous caustic soda solution and then distilled.

Method of purification: Rectification.

Grades: Technical, U. S. P.; B. P.

Containers: Iron drums.

Uses: Solvent; anesthetic; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

- Chloroformum**, U. S. P., B. P. See Chloroform.
- Chlorohydric Acid**. See Acid hydrochloric.
- Chloromethane**. See Methyl chloride.
- Chloromethylchloroformate*** (Palite)
 $\text{ClCOOCH}_2\text{Cl}$. A military poison gas used in the late war.
- Chloromethymethyl Ester**. See Forman.
- Chloronitrobenzene, Meta*** (Meta-chloronitrobenzol) $\text{C}_6\text{H}_4\text{Cl}(\text{NO}_2)_{1:3}$.
 Color and properties: Yellowish crystals.
 Constants: Specific gravity 1.534; melting-point 44°C .; boiling-point 236°C .
 Soluble in alcohol, ether, chloroform and benzol.
 Derivation: By chlorinating nitrobenzene in presence of iodine.
 Method of purification: Recrystallization.
 Grades: Technical.
 Containers: Wooden kegs.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Chloronitrobenzene, Ortho-** (Ortho-chloronitrobenzol)
 $\text{C}_6\text{H}_4\text{Cl}(\text{NO}_2)_{1:2}$.
 Color and properties: Yellow liquid.
 Constants: Specific gravity 1.368; boiling-point 245.5°C .
 Soluble in alcohol and benzol.
 Derivation: By nitrating chlorobenzene.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Chloronitrobenzene, Para-** (Para-chloronitrobenzol) $\text{C}_6\text{H}_4\text{Cl}(\text{NO}_2)_{1:4}$.
- Color and properties: Yellowish crystals.
 Constants: Specific gravity 1.520; melting-point 83°C .; boiling-point 242°C .
 Soluble in alcohol and ether; insoluble in water.
 Derivation: By the action of nitric acid on chlorobenzene.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Wooden kegs; tins.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Chloronitrobenzol**. See Chloronitrobenzene.
- Chlorophthalic Acid**. See Acid chlorophthalic.
- Chloropicrin**. See Nitrotrichloromethane.
- Chloroplatinic Acid**. See Acid chloroplatinic.
- Chloropropyleneglycol**. See Monochlorohydrin.
- Chlorosulfonic Acid**. See Acid chlorosulfonic.
- Chlorotoluene, Omega-**. See Benzyl chloride.
- Chlorotoluol, Omega-**. See Benzyl chloride.
- Chloropicrin**. See Nitrotrichloromethane.
- Choleic Acid**. See Acid taurocholic.
- Choleinic Acid**. See Acid taurocholic.
- Choliaic Acid**. See Acid taurocholic.
- Cholic Acid**. See Acid glycholic.

Cholepyrrhin. See Bilirubin.

Cholesterin. See Cholesterol.

Cholesterol* $C_{26}H_{43}OH.H_2O$.
Color and properties: Unctuous white, pearly scales.
Constants: Specific gravity 1.067; melting-point $148.5^{\circ}C$.
Soluble in alcohol and ether; insoluble in water.
Derivation: From gall, brain and vegetable fats.
Grades: Technical.
Containers: Tins.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Chondrus* (Carragheen; Irish moss; Pig-wrack; Pearl moss; Killeen; Rock-salt moss).
Derivation: Dried plant of *Chondrus crispus*.
Habitat: Irish coast, New England and Atlantic Ocean.
Grades: Technical; U. S. P.
Containers: Burlap bags.
Uses: Medicine; nutrient; demulcent; emulsifier; leather dressing.
Fire hazard: None.
Railroad shipping regulations: None.

Chrome Alum. See Chromium-potassium sulfate.

Chrome Green. See Chromic oxide.

Chrome-iron. See Chromitron.

Chrome Orange. Basic lead chromate, $PbCrO_5$.

Chrome Red. Lead chromate, Basic.

Chrome Yellow. See Lead chromate.

Chromic Acid. See Acid chromic.

Chromic Chloride* (Chromium chloride; Chromium sesquichloride) $CrCl_3$ or $CrCl_3.6H_2O$.

Color and properties: Reddish-violet, crystalline powder.

Constants: Specific gravity 2.757; boiling-point 1200° - $1500^{\circ}C$.

Anhydrous: Insoluble in water, but a trace of chromous chloride or stannous chloride will cause it to go into solution. Hydrous: Soluble in water and alcohol.

Derivation: Anhydrous: Chlorine is passed over a heated mixture of chromic oxide and carbon, and sublimation. Hydrous: By the action of hydrochloric acid on chromium hydroxide.

Grades: Technical.

Containers: Wooden barrels.

Uses: Chromium salts; mordant in the textile industry.

Fire hazard: None.

Railroad shipping regulations: None.

Chromic Fluoride* (Chromium fluoride) $CrF_3.4H_2O$.

Color and properties: Fine, green crystalline powder.

Constants: Specific gravity 3.78

Soluble in water and acids; insoluble in alcohol.

Derivation: By the interaction of chromium hydroxide and hydrofluoric acid.

Method of purification: Crystallization.

Grades: Technical

Containers: Wooden barrels.

Uses: Printing and dyeing wools; coloring and hardening marble.

Fire hazard: None.

Railroad shipping regulations: None.

Chromic Hydrate. See Chromic hydroxide.

Chromic Hydroxide* (Chromium hydroxide; Chromium hydrate) $Cr(OH)_3$.

Color and properties: Green, gelatinous precipitate.

Soluble in acids; insoluble in water.

Derivation: By adding a solution of sodium hydroxide to the solution of a chromium salt.

Grades: Technical.

Containers: Wooden kegs.
Uses: Chromium salts.
Fire hazard: None.
Railroad shipping regulations: None.

Chromic Oxide* (Chrome green)

Cr_2O_3 .
Color and properties: Bright-green, crystalline powder.
Constants: Specific gravity 5.04; melting-point 1990°C .
Insoluble in water and acids.
Derivation: (a) By heating chromium hydroxide. (b) By heating dry ammonium bichromate. (c) By heating potassium bichromate with sulfur and washing out the potassium sulfate.
Grades: Technical; U. S. P.
Containers: Wooden barrels.
Uses: Metallurgy; paint pigment; ceramics.
Fire hazard: None.
Railroad shipping regulations: None.
See also Acid chromic, Anhydride.

Chromic Phosphate* (Chromium phosphate; Arnaudon's green; Plessy's green) $\text{Cr}(\text{PO}_4)$.

Color and properties: Bluish-green powder.
Soluble in acids; insoluble in water.
Derivation: By the interaction of solutions of chromium chloride and sodium phosphate.
Grades: Technical.
Containers: Wooden kegs.
Uses: Paint pigment.
Fire hazard: None.
Railroad shipping regulations: None.

Chromic Sulfate* (Chromium sulfate)

(a) $\text{Cr}_2(\text{SO}_4)_3$.
(b) $\text{Cr}_2(\text{SO}_4)_3 \cdot 15\text{H}_2\text{O}$.
Color and properties: (a) Violet or red powder. (b) Dark-green amorphous scales.
Constants: Specific gravity (a) 3.012. (b) 1.867.
(a) Insoluble in water and acids. (b) Soluble in water.
Derivation: By the action of sulfuric acid on chromium hydroxide, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.
Containers: Wooden barrels.
Uses: Textile industries; green varnishes; green ink.
Fire hazard: None.
Railroad shipping regulations: None.

Chromii Trioxidum, U. S. P. See Chromic oxide.

Chromite. A natural chromate of iron, FeCr_2O_4 . Contains 68 per cent chromic oxide. California, Georgia, Maryland, Massachusetts, New York, North Carolina, Oregon, Pennsylvania, Virginia and Wyoming.

Chromitron*. An acid-resisting alloy of chromium and iron.

Chromium* Cr.

Color and properties: Shining, steel-gray metal.
Constants: Specific gravity 6.92; melting-point 1520°C ; boiling-point 2200°C .
Soluble in acids.
Derivation. By reduction of the oxide with aluminum filings by the Goldschmidt process.
Grades: Technical.
Containers: Cars; barrels.
Uses: Metallurgy; chromium salts.
Fire hazard: None.
Railroad shipping regulations: None.

Chromium Acetate. See Chromous acetate.

Chromium Chloride. See Chromic chloride.

Chromium Fluoride. See Chromic fluoride.

Chromium Hydrate. See Chromic hydroxide.

Chromium Hydroxide. See Chromic hydroxide.

Chromium Oxide. See Chromic oxide.

Chromium Phosphate. See Chromic phosphate.

Chromium-Potassium Sulfate* (Chrome alum) $K_2SO_4 \cdot Cr_2(SO_4)_3 \cdot 24H_2O$.

Color and properties: Dark, violet-red crystals.

Constants: Specific gravity 1.81278.

Soluble in water.

Derivation: By reducing potassium bichromate in dilute sulfuric acid with sulfurous acid.

Grades: Technical.

Containers: Wooden casks.

Uses: Tanning industry, chrome-tau liquors; textile industry as a mordant.

Fire hazard: None.

Railroad shipping regulations: None.

Chromium Sesquichloride. See Chromic chloride.

Chromium Sulfate. See Chromic sulfate.

Chromous Acetate* (Chromium acetate) $Cr(C_2H_3O_2)_3 \cdot H_2O$.

Color and properties: Grayish-green powder or bluish-green, pasty mass. Soluble in water; insoluble in alcohol.

Derivation: By the action of acetic acid on chromium hydroxide. The solution is evaporated and crystallized.

Method of purification: Recrystallization.

Grades: Technical; paste; powder.

Containers: Wooden barrels.

Uses: Textile industry.

Fire hazard: None.

Railroad shipping regulations: None.

Chrysamine. A coal-tar dyestuff used in dyeing textiles and leather yellow.

Chrysarobin* (Medicinal "chrysophanic acid"; Purified goa powder; Araroba) $C_{20}H_{20}O_7$.

Color and properties: Microcrystalline orange-yellow powder; turns brownish-yellow on exposure to air; very irritating to the eyes.

Derivation: Neutral principle from goa powder, a substance deposited in the wood of *Vouacapoua araroba*; yielding chrysophanic acid on oxidation.

Constants: Specific gravity 0.920-0.922; melting-point $157^\circ C$.

Soluble in water, alcohol and ether.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Chrysarobinum, U. S. P., B. P. See *Chrysarobin*

Chrysazin. See Dioxyanthraquinone, 178.

Chrysocollo. A natural hydrous copper silicate. Contains about 36 per cent of copper. Arizona, California, Colorado, Maryland, Michigan, Montana, Nevada, New Jersey, New Mexico, North Carolina, Oregon, Utah, Virginia and Wyoming.

Chrysoidine. An orange dyestuff for wool, silk, cotton and leather; also used in coloring confectionery and liqueurs.

Chrysophanic Acid. See *Chrysarobin*.

Chrysophenine.* A yellow synthetic dyestuff, used in dyeing textiles and leather.

Chrysotile (Fibrous serpentine). See Asbestos. Arizona, Maryland, Vermont and Wyoming.

Cimicifuga* (Black snake root, *Actæa*, Black cohosh, Bugbane, Bugwort).

Derivation: Dried rhizome and roots of *Cimicifuga racemosa*.

Habitat: United States and Canada.

Grades: Technical; U. S. P.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cina. See *Santonica*.

Cinchona Bark, Calisaya (Peruvian bark, Yellow cinchona bark, Calisaya bark, Jesuits' bark).

Derivation: Dried bark of *Cinchona calisaya* or other species of cinchona.

Habitat: South America; cultivated in Java, India, Jamaica, Ceylon and West Africa.

Grades: Technical; U. S. P.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cinchona Bark, Loxa (Loxa bark, *Cinchona pallida*, Crown bark, Pale cinchona, Loja bark, Huanuco bark, Cuenca bark).

Derivation: Bark of *Cinchona officinalis* and other species of cinchona.

Habitat: Loxa and other parts of Ecuador; cultivated in India.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cinchona Bark, Succirubra (Red cinchona, Red Peruvian bark, Red bark, St. Ann's bark).

Derivation: Dried bark of *Cinchona succirubra* or of its hybrids.

Habitat: South America; cultivated in Japan, Java, India and Western Africa.

Grades: Technical; U. S. P.; B. P.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cinchona Pallida. See *Cinchona bark, Loxa*.

Cinchona Rubra, U. S. P., B. P. See *Cinchona bark, Succirubra*.

Cinchonidinae Sulfas, U. S. P. See *Cinchonidine*.

Cinchonidine.*

(a) Alkaloid: $C_{19}H_{22}N_2O$.

(b) Hydrochloride:

$C_{19}H_{22}N_2O \cdot HCl \cdot H_2O$.

(c) Bisulfate:

$C_{19}H_{22}N_2O \cdot H_2SO_4 \cdot 5H_2O$.

(d) Sulfate:

$(C_{19}H_{22}N_2O)_2 \cdot H_2SO_4 \cdot 3H_2O$.

Color and properties: White prisms or powder.

Constants: Melting-point (a) $207.2^\circ C$;

(d) $205.3^\circ C$.

(a) Soluble in alcohol; slightly soluble in water and ether.

(b) Soluble in alcohol; slightly soluble in water.

(c) Soluble in water and alcohol.

(d) Soluble in water and alcohol; slightly soluble in ether.

Derivation: By extraction of certain varieties of cinchona bark, and subsequent crystallization. The salts are formed by the action of the respective acid on the alkaloid.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Amber glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cinchoninae Sulfas, U. S. P. See *Cinchonine*.

Cinchonine.*

(a) Alkaloid:

$C_{19}H_{22}N_2O$.

(b) Hydrochloride:

$C_{19}H_{22}N_2O \cdot HCl \cdot 2H_2O$.

(c) Nitrate:

$C_{19}H_{22}N_2O \cdot HNO_3 \cdot \frac{1}{2}H_2O$.

(d) Bisulfate:

$C_{19}H_{22}N_2O \cdot H_2SO_4 \cdot 4H_2O$.

(e) Sulfate:

$(C_{19}H_{22}N_2O)_2 \cdot H_2SO_4 \cdot 2H_2O$.

Color and properties: White, shining prisms or needles.

Constants: Melting-point (a) $264.3^\circ C$;

(e) 198.5 .

(a) Slightly soluble in water, alcohol and ether.

(b) Soluble in water, alcohol and ether.

(c) Soluble in water and alcohol; water.

(d) Soluble in alcohol, ether and water.

(e) Soluble in water and alcohol; slightly soluble in ether.

Derivation: By extraction of the bark of various species of cinchona and subsequent crystallization. The salts are formed by the action of the respective acid on the alkaloids.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Amber glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cinchotone. See Quinidine.

Cinene. See Dipentene.

Cineole. See Eucalyptol.

Cinnabar. A natural vermilion mercury sulfide, HgS , containing 86 per cent of mercury. It is the common ore of mercury and forms hexagonal crystals. See Metacinnabarite and Mercury sulfide. Red. Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, South Dakota, Texas and Utah.

Cinnabar, Austrian. Lead chromate, Basic.

Cinnamaldehyde. See Cinnamic aldehyde.

Cinnamene. See Styrene.

Cinnamenol. See Styrene.

Cinnamic Acid. See Acid cinnamic.

Cinnamic Aldehyde* (Cinnamaldehyde, Cinnamyl aldehyde)

$\text{C}_6\text{H}_5\text{CH}.\text{CH}.\text{CHO}$.

Color and properties: Yellowish oil; cinnamon odor. Keep well stoppered.

Constants: Specific gravity 1.129, melting-point -8°C .; boiling-point 248°C . Soluble in alcohol and ether; very slightly soluble in water.

Derivation: (a) From Ceylon and Chinese cinnamon oils. (b) By condensation of benzaldehyde and acetaldehyde.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Extracts.

Fire hazard: None.

Railroad shipping regulations: None.

Cinnamic Ether. See Ethyl cinnamate.

Cinnamol. See Styrene.

Cinnamon, Cassia (Cinnamon, Cassia bark, Chinese cinnamon).

Derivation: Bark of *Cinnamomum cassia*.

Habitat: Southern China and Anam.

Grades: Technical.

Containers: Boxes.

Uses: Medicine; source of cinnamon oil; flavoring; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Cinnamon, Ceylon.

Derivation: Inner bark of the shoots of *Cinnamomum zeylanicum*.

Habitat: Ceylon, Sumatra and Borneo; cultivated in tropical Africa, America and Asia.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; source of cinnamon oil; flavoring; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Cinnamon Leaf Oil.

Color and properties: A pale-yellow, limpid liquid; combined cinnamon and clove odor.

Chief known constituents: Eugenol, cinnamic aldehyde and safral.

Constants: Specific gravity 1.044-1.065;

refractive index 1.535; optical rotation $0^{\circ}5'$ to $+1^{\circ}$.
Soluble in alcohol, ether and chloroform.
Derivation: Distilled from the leaves of *Cinnamomum zeylanicum*.
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Flavoring.
Fire hazard: None.
Railroad shipping regulations: None.

Cinnamon Oil, Ceylon.

Color and properties: A pale-yellow liquid; characteristic odor of cinnamon; aromatic, spicy odor.
Chief known constituents: Cinnamic aldehyde and eugenol.
Constants: Specific gravity 1.024-1.040; refractive index 1.590-1.599; optical rotation 0 to -1 .
Soluble in alcohol, ether and chloroform.
Derivation: Distilled from the bark of Ceylon cinnamon bark.
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine; flavoring; perfumery.
Fire hazard: None.
Railroad shipping regulations: None.

Cinnamon Oil, Chinese. See Cassia oil.

Cinnamon, Saigon.

Derivation: Bark of an undetermined species of *Cinnamomum*.
Habitat: Anam (Cochin China); cultivated in Java, Sumatra and South America.
Grades: Technical; U. S. P.
Containers: Boxes.
Uses: Medicine; source of cinnamon oil; flavoring; condiment.
Fire hazard: None.
Railroad shipping regulations: None.

Cinnamon Wood. See Sassafras bark.

Cinnamomum Saigoncum, U. S. P. See Cinnamon, Saigon.

Cinnamomum Zeylanicum, U. S. P., B. P. See Cinnamon, Ceylon.

Cinnamyl Alcohol* (Styrone, Styryl alcohol) $C_6H_5CH:CH:CH_2OH$.

Color and properties: White needles or crystals; hyacinth-like odor.
Constants: Specific gravity 1.0397; melting-point $33^{\circ}C$; boiling-point $257^{\circ}C$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the interaction of styracin and potassium hydroxide and distillation.
Method of purification: Recrystallization.
Grades: Technical.
Containers: Tin cans; glass bottles.
Uses: Perfumery.
Fire hazard: None.
Railroad shipping regulations: None.

Cinnamyl Aldehyde. See Cinnamic aldehyde.

Cinnamylic Acid. See Acid cinnamic.

Cinnamylic Ether. See Ethyl cinnamate.

Citric Acid. See Acid citric.

Citronella Oil* (Lana batu).

Color and properties: A limpid, yellowish or greenish-yellow liquid; agreeable odor.
Chief known constituents: Geraniol; citronellal and methyl eugenol.
Constants: Refractive index 1.4811-1.4830; optical rotation -5 to -21 .
Soluble in alcohol, ether and chloroform.
Derivation: Distilled from the grass of a species of *Andropogon*.
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Soaps; perfumes, medicine; insectifuge.
Fire hazard: None.
Railroad shipping regulations: None.

Citronella Oil, Singapore.

Color and properties: A colorless oil; agreeable verberna-like odor.

(a) Slightly soluble in water, alcohol and ether.

(b) Soluble in water, alcohol and ether.

(c) Soluble in water and alcohol; water.

(d) Soluble in alcohol, ether and water.

(e) Soluble in water and alcohol; slightly soluble in ether.

Derivation: By extraction of the bark of various species of cinchona and subsequent crystallization. The salts are formed by the action of the respective acid on the alkaloids.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Amber glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cinchotone. See Quinidine.

Cinene. See Dipentene.

Cineole. See Eucalyptol.

Cinnabar. A natural vermilion mercury sulfide, HgS , containing 86 per cent of mercury. It is the common ore of mercury and forms hexagonal crystals. See Metacinnabarite and Mercury sulfide. Red. Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, South Dakota, Texas and Utah.

Cinnabar, Austrian. Lead chromate, Basic.

Cinnamaldehyde. See Cinnamic aldehyde.

Cinnamene. See Styrene.

Cinnamenol. See Styrene.

Cinnamic Acid. See Acid cinnamic.

Cinnamic Aldehyde* (Cinnamaldehyde, Cinnamyl aldehyde)

$\text{C}_6\text{H}_5\text{CH}.\text{CH}.\text{CHO}$.

Color and properties: Yellowish oil; cinnamon odor. Keep well stoppered.

Constants: Specific gravity 1.129, melting-point -8°C .; boiling-point 248°C . Soluble in alcohol and ether; very slightly soluble in water.

Derivation: (a) From Ceylon and Chinese cinnamon oils. (b) By condensation of benzaldehyde and acetaldehyde.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Extracts.

Fire hazard: None.

Railroad shipping regulations: None.

Cinnamic Ether. See Ethyl cinnamate.

Cinnamol. See Styrene.

Cinnamon, Cassia (Cinnamon, Cassia bark, Chinese cinnamon).

Derivation: Bark of *Cinnamomum cassia*.

Habitat: Southern China and Anam.

Grades: Technical.

Containers: Boxes.

Uses: Medicine; source of cinnamon oil; flavoring; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Cinnamon, Ceylon.

Derivation: Inner bark of the shoots of *Cinnamomum zeylanicum*.

Habitat: Ceylon, Sumatra and Borneo; cultivated in tropical Africa, America and Asia.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; source of cinnamon oil; flavoring; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Cinnamon Leaf Oil.

Color and properties: A pale-yellow, limpid liquid; combined cinnamon and clove odor.

Chief known constituents: Eugenol, cinnamic aldehyde and safral.

Constants: Specific gravity 1.044-1.065;

Coal.

Derivation: A carbonaceous substance formed from the remains of vegetation by partial, progressive decomposition (oxidation), the successive stages being peat, lignite or brown coal, bituminous or soft coal and anthracite or hard coal. These substances vary primarily in their physical structure, hardness, volatile constituents and carbon content, the latter being the most important characteristics.

| | Per cent carbon | Per cent volatile |
|---|-----------------|-------------------|
| Peat | 24 to 30 | 49 to 56 |
| Lignite | 27 to 43 | 31 to 38 |
| Bituminous coal.. | 50 to 80 | 14 to 35 |
| Anthracite | 70 to 85 | 4 to 14 |
| Uses: (a) Bituminous: Fuel; coke production; illuminating and fuel gas manufacture; briquet manufacture | | |
| (b) Anthracite: Fuel. | | |

Coal Oil. Crude petroleum, kerosene or the crude oil from the destructive distillation of bituminous coal.

Coal-tar.*

Derivation: A black, viscous liquid, by-product of the destructive distillation of coal.

Grades: Crude; refined; U. S. P.; B. P.

Containers: Tank-cars; barrels.

Uses: Waterproofing, paints, pipe-coating, roads, roofing, insulation, production of benzol, toluol, xylol, phenol, anthracene, lampblack and pitch, by distillation; medicine.

Coal-tar Naphtha. See Naphtha, Solvent.

Coal-tar Pitch. See Pitch, Coal-tar.

Cobalt* Co.

Color and properties: Steel-gray, shining, hard, ductile, somewhat malleable metal, not found native. See Cobaltite, Erythrite, Linnaeite, Smaltite. Canada, Colorado, Idaho, Missouri, Nevada, South Carolina,

Tennessee, Washington and Wyoming.

Soluble in acids; insoluble in water.

Derivation: (a) Reduction of the oxide with carbon in the electric furnace. (b) Reduction of the oxide by the Goldschmidt process. (c) Reduction of the oxalate or oxide with hydrogen.

Grades: Technical containing more or less nickel and iron; pure cobalt "shot" (granules about 98 per cent Co.)

Containers: Wooden barrels.

Uses: Metallurgy; cobalt salts; alloys; electroplating.

Fire hazard: None.

Railroad shipping regulations: None.

Cobalt Acetate. See Cobaltous acetate.

Cobalt-Ammonium Sulfate*

$\text{CoSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$.

Color and properties: Ruby-red crystals.

Constants: Specific gravity 1.902.

Soluble in water; insoluble in alcohol.

Derivation: By the action of dilute sulfuric acid of ammonio-cobaltous hydroxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Cobalt Arsenate. See Cobaltic arsenate.

Cobalt Bloom. See Erythrite.

Cobalt Bromide. See Cobaltous bromide.

Cobalt Carbonate. See Cobaltous carbonate.

Cobalt Chloride. See Cobaltic chloride and Cobaltous chloride.

(a) Slightly soluble in water, alcohol and ether.

(b) Soluble in water, alcohol and ether.

(c) Soluble in water and alcohol; water.

(d) Soluble in alcohol, ether and water.

(e) Soluble in water and alcohol; slightly soluble in ether.

Derivation: By extraction of the bark of various species of cinchona and subsequent crystallization. The salts are formed by the action of the respective acid on the alkaloids.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Amber glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cinchotone. See Quinidine.

Cinene. See Dipentene.

Cineole. See Eucalyptol.

Cinnabar. A natural vermilion mercury sulfide, HgS , containing 86 per cent of mercury. It is the common ore of mercury and forms hexagonal crystals. See Metacinnabarite and Mercury sulfide. Red. Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, South Dakota, Texas and Utah.

Cinnabar, Austrian. Lead chromate, Basic.

Cinnamaldehyde. See Cinnamic aldehyde.

Cinnamene. See Styrene.

Cinnamenol. See Styrene.

Cinnamic Acid. See Acid cinnamic.

Cinnamic Aldehyde* (Cinnamaldehyde, Cinnamyl aldehyde)

$\text{C}_6\text{H}_5\text{CH}.\text{CH}.\text{CHO}$.

Color and properties: Yellowish oil; cinnamon odor. Keep well stoppered.

Constants: Specific gravity 1.129, melting-point -8°C .; boiling-point 248°C . Soluble in alcohol and ether; very slightly soluble in water.

Derivation: (a) From Ceylon and Chinese cinnamon oils. (b) By condensation of benzaldehyde and acetaldehyde.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Extracts.

Fire hazard: None.

Railroad shipping regulations: None.

Cinnamic Ether. See Ethyl cinnamate.

Cinnamol. See Styrene.

Cinnamon, Cassia (Cinnamon, Cassia bark, Chinese cinnamon).

Derivation: Bark of *Cinnamomum cassia*.

Habitat: Southern China and Anam.

Grades: Technical.

Containers: Boxes.

Uses: Medicine; source of cinnamon oil; flavoring; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Cinnamon, Ceylon.

Derivation: Inner bark of the shoots of *Cinnamomum zeylanicum*.

Habitat: Ceylon, Sumatra and Borneo; cultivated in tropical Africa, America and Asia.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; source of cinnamon oil; flavoring; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Cinnamon Leaf Oil.

Color and properties: A pale-yellow, limpid liquid; combined cinnamon and clove odor.

Chief known constituents: Eugenol, cinnamic aldehyde and safral.

Constants: Specific gravity 1.044-1.065;

Cobaltic Chloride* (Cobalt chloride)CoCl₂.

Color and properties: Ruby-red crystals.

Constants: Specific gravity 2.94; melting-point: Sublimes.

Soluble in water.

Derivation: By the action of hydrochloric acid on cobaltic oxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Barometers; hydrometers; galvanoplasting; sympathetic inks.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltic Hydroxide* (Cobalt hydroxide; Cobalt hydrate) Co(OH)₃.

Color and properties: Dark-brown powder.

Soluble in cold concentrated acids; insoluble in water and alcohol.

Derivation: By the addition of sodium hydroxide to a solution of a cobaltic salt.

Grades: Technical.

Containers: Tins; kegs; glass bottles.

Uses: Cobalt salts.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltic Oxide* (Cobalt oxide) Co₂O₃.

Color and properties: Steel-gray powder.

Constants: Specific gravity 4.81-5.60; melting-point: Decomposes at red-heat.

Soluble in concentrated acids; insoluble in water.

Derivation: By heating cobaltic hydroxide.

Grades: Technical.

Containers: Wooden barrels.

Uses: Pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltite (Cobalt glance). A natural sulfarsenide of cobalt, CoAsS. Contains 35.5 per cent of cobalt. Oregon.

Cobaltous Acetate* (Cobalt acetate)Co(C₂H₃O₂)₂·4H₂O.

Color and properties: Reddish-violet, deliquescent crystals.

Constants: Specific gravity 1.7043.

Soluble in water.

Derivation: By the action of acetic acid on cobaltous hydroxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; pure crystalline.

Containers: Glass bottles.

Uses: Sympathetic inks.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Bromide* (Cobalt bromide)CoBr₂.

Color and properties: Red crystals.

Constants: Specific gravity 4.909; melting-point: Decomposes.

Soluble in water, alcohol and ether.

Derivation: By the action of hydrobromic acid on cobalt.

Grades: Technical.

Containers: Glass bottles.

Uses: In hydrometers.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Carbonate* (Cobalt carbonate, Cobalt oxide "K.O.H.") CoCO₃.

Color and properties: Light-rose colored powder.

Constants: Melting-point: Decomposes.

Soluble in acids; insoluble in water.

Derivation: By adding sodium carbonate to a solution of cobaltous acetate, followed by filtration and drying.

Grades: Technical.

Containers: Wooden barrels.

Uses: Manufacturing cobaltic oxide; cobalt pigments; cobalt salts.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Chloride* (Cobalt chloride)(a) CoCl₂; (b) CoCl₂·6H₂O.

Color and properties: Ruby-red crystals.

Constants:

Specific gravity

(a)

(b)

Melting-point

3.348

Sublimes

1.84
86.75°C

Soluble in water.

Derivation: By the action of hydrochloric acid on cobalt oxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Barometers; hydrometers; absorbent for ammonia, gas in military and industrial gas-masks; galvanoplasting; sympathetic inks.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Hydroxide* (Cobalt hydroxide; Cobalt hydrate) $\text{Co}(\text{OH})_2$.

Color and properties: Rose-red powder.

Constants: Specific gravity 3.597.

Soluble in acids and ammonium salt solutions; insoluble in water and alkalis.

Derivation: By the addition of sodium hydroxide to a solution of a cobaltous salt.

Grades: Technical.

Containers: Tins; kegs; glass bottles.

Uses: Cobalt salts.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Iodide* (Cobalt iodide)

$\text{CoI}_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: Brownish-red crystals.

Soluble in water and alcohol.

Derivation: By the action of hydriodic acid on cobalt.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: In hydrometers.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Linoleate* (Cobalt linoleate)

$\text{Co}(\text{C}_{18}\text{H}_{31}\text{O}_2)_2$.

Color and properties: Brown, amorphous powder.

Soluble in alcohol, ether and acids; insoluble in water.

Derivation: By boiling a cobalt salt and sodium linoleate.

Grades: Technical.

Containers: Wooden barrels.

Uses: Varnish driers.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Nitrate* (Cobalt nitrate)

$(\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O})$.

Color and properties: Red crystals, deliquescent in moist air.

Constants: Specific gravity 1.83; melting-point 56°C .

Soluble in water and in acids.

Derivation: By the action of nitric acid on cobalt with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Sympathetic inks; cobalt pigments.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Cobaltous Oleate* (Cobalt oleate)

$\text{Co}(\text{C}_{18}\text{H}_{33}\text{O}_2)_2$.

Color and properties: Brown, amorphous powder.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating cobaltous chloride and sodium oleate, followed by filtration and drying.

Grades: Technical.

Containers: Wooden barrels.

Uses: Varnish driers.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Oxide* (Cobalt oxide) CoO .

Color and properties: Blue or black powder.

Constants: Specific gravity 5.6-5.75; melting-point 2860°C .

Soluble in acids and alkalis; insoluble in water.

Derivation: By heating cobaltous hydroxide.

Grades: Technical.

Containers: Wooden barrels.

Uses: Pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Phosphate* (Cobalt phosphate, Cobalt oxide "P.K.O.")
 $\text{Co}_3(\text{PO}_4)_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: Pink powder.

Soluble in phosphoric acid; insoluble in water.

Derivation: By the interaction of solutions of cobalt salts and sodium phosphate.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Manufacturing cobalt pigments; coloring glass; painting on porcelain in light blue colors.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Resinate* (Cobalt resinate)

$\text{Co}(\text{C}_{44}\text{H}_{62}\text{O}_4)_2$.

Color and properties: Brown powder.

Insoluble in water.

Derivation: By heating a cobalt salt and rosin oil.

Grades: Technical; pure precipitated.

Containers: Iron drums.

Uses: Varnish drier.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Cobaltous Sulfate* (Cobalt sulfate)

(a) CoSO_4 ; (b) $\text{CoSO}_4 \cdot 7\text{H}_2\text{O}$.

Color and properties: Red powder.

| | | |
|------------------|-------|--------|
| Constants: | (a) | (b) |
| Specific Gravity | 3.472 | 1.918 |
| Melting-point | 989°C | 96.8°C |
| Boiling-point | ..... | 420°C |

Soluble in water.

Derivation: By the action of sulfuric acid on cobaltous oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs; tins.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Cobaltous Tungstate* (Cobalt tungstate;

Cobalt wolframate) CoWO_4 .

Color and properties: Reddish-orange powder.

Insoluble in water.

Derivation: By adding a sodium tung-

state solution to a solution of a cobalt salt.

Grades: Technical.

Containers: Wooden barrels; tins.

Uses: Pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Coca (Erythroxyton; Cuca; Hayc Ipado)

Derivation: Dried leaves of Erythroxyton coca, known commercially as Huanaco coca, or Truxillense Rusby, known commercially as Truxillo coca. Contains a very small amount of cocaine.

Habitat: Bolivia, Chili and Peru.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cocaina, U. S. P., B. P. See Cocaine.

Cocainæ Hydrochloridum, U. S. P., B. P. See Cocaine hydrochloride.

Cocaine* $\text{C}_{17}\text{H}_{21}\text{NO}_4$.

Color and properties: Colorless crystalline alkaloid; poisonous, habit-forming drug.

Constants: Melting-point 98°C.

Derivation: By extraction of the leaves of Erythroxyton coca with sodium carbonate solution, treatment of the latter with dilute acid and extraction with ether, evaporation of the solvent, re-solution of the alkaloid and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Medicine; local anesthesia; dentistry (sold subject to strict governmental supervision in most countries).

Fire hazard: None.

Railroad shipping regulations: None.

Cocaine Hydrochloride*

$\text{C}_{17}\text{H}_{21}\text{NO}_4 \cdot \text{HCl}$.

Color and properties: White crystals; poisonous, habit forming drug.

Constants: Melting-point 183° - 191° C. Soluble in water and alcohol; insoluble in ether.

Derivation: By the action of hydrochloric acid on cocaine.

Method of purification: Crystallization

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine; dentistry. (Sold subject to strict governmental supervision in most countries).

Fire hazard: None.

Railroad shipping regulations: None.

Coccus, U. S. P., B. P. See Cochineal.

Cochineal

Derivation: Dried bodies of the female insects of *Coccus cacti*, which live on cactus plants in Mexico, Central America, Algeria and the East Indies. They are collected and killed by heat. The coloring principle is carminic acid $C_{17}H_{18}O_{10}$.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Technical; coloring food and medicinal products, toilet preparations; manufacture of red and pink lakes and carmine; indicator in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None

Cocoa. Indiscriminately and incorrectly used to designate both cacao and the coco-nut.

Cocoa Butter. See Cacao butter.

Cocoa-nut Oil. See Coco-nut oil.

Cocoa Shells. See Cacao shells.

Coco-nut Oil* (Coco-nut palm oil, Coconut oil).

Color and properties: White, semi-solid, lard-like fat; characteristic odor.

Constants: Specific gravity 0.9115; sa-

ponification value 250-258; iodine value 8.9; melting-point 20° C- 28° C.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: From the coco-nut (*Cocos nucifera*), the chief commercial supply coming from India, Ceylon and the South Sea Islands. The fresh meat of the nut is pressed, boiled in water or heated with solvents and the oil extracted.

Method of purification: Filtration.

Grades: Crude; refined; Ceylon; Cochlin; Manila. Free fatty acid content: 2 per cent; 5 per cent; 7 per cent; 72 per cent.

Containers: Wooden barrels.

Uses: Marine soaps; butter substitutes; food-tuffs; cosmetics.

Fire hazard: None.

Railroad shipping regulations: None.

See also Copra oil.

Coco-nut Palm Oil. See Coco-nut oil.

Cocoic Ether. See Ethyl cocoinate.

Cocoinic Ether. See Ethyl cocoinate.

Cod-liver Oil* (Banks oil).

Color and properties: Yellowish-brown to reddish-brown, liquid, fixed, non-drying oil; characteristic odor.

Constants: Specific gravity 0.922-0.930; saponification value 182-189; iodine value 141-159; maumené test 102-113; acid value 204-207.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: From the livers of the cod-fish (*Gadus morrhua*), which are rendered by steam heat and the oil separated and chilled until the stearin solidifies, when it is pressed and the clear oil collected.

Method of purification: Filtration.

Grades: U. S. P.; pale; light-brown; dark-brown.

Containers: Wooden barrels; tank-cars

Uses: Medicine; leather dressing; chamois leather tanning.

Fire hazard: None.

Railroad shipping regulations: None.

Codeina, U. S. P., B. P. See Codeine.

Codeinæ Phosphas, U. S. P., B. P. See Codeine.

Codeinæ Sulfas, U. S. P. See Codeine.

Codeine* (a) Alkaloid:

$C_{18}H_{21}NO_8 \cdot H_2O$.

(b) Hydrochloride:

$C_{18}H_{21}NO_8 \cdot HCl \cdot 2H_2O$.

(c) Phosphate.

$C_{18}H_{21}NO_8 \cdot PO_4 \cdot 2H_2O$.

(d) Sulfate:

$(C_{18}H_{21}NO_8)_2 \cdot H_2SO_4 \cdot 5H_2O$.

Color and properties: Colorless or almost colorless crystals; poisonous.

Constants: Melting-point (a) $154.9^\circ C$;

(b) $264^\circ C$; (c) $235^\circ C$; (d) $278^\circ C$.

(a) Soluble in water, alcohol and ether.

(b) Soluble in water.

(c) Soluble in water; slightly soluble in ether and alcohol.

(d) Soluble in water; insoluble in alcohol and ether.

Derivation: From opium by extraction and subsequent crystallization. The salts are obtained by the action of the respective acid on the alkaloid.

Method of purification: Recrystallization.

Color and properties: Colorless crystals.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Codoil. See Rosin oil.

Coffee. See Caffea.

Cognac Ether. See Ethyl cocoinate.

Cognac Oil. See Oenanthic ether.

Cohosh. See Caulophyllum.

Cohosh, Black. See Cimicifuga.

Cohune-nut Oil. See Cohune oil.

Cohune Oil* (Cohune-nut oil; Cahoun-nut oil; Cahune-nut oil; Corozo-nut oil).

Color and properties: Yellowish, fixed, semi-liquid fat.

Constants: Melting-point 18° - $20^\circ C$; saponification value 253.9; iodine number 12.9-13.6.

Soluble in ether and benzol; insoluble in water.

Derivation: From the cohune-nut, *Attalea cohune*, by expression.

Grades: Technical.

Containers: Tins.

Uses: Candles; soap; substitute for coco-nut oil in cooking, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Coke. Coal from which the volatile constituents have been driven off by heat, air or oxygen being excluded, so that the fixed carbon and the ash are fused together and remain as coke. Commonly artificial, but natural coke is also known. New Mexico and Virginia.

Cola (Kola; Soudan coffee; Guru).

Derivation: Seeds of *Cola acuminata*.

Habitat: West Africa, West Indies, Ceylon and India.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Colchici Cormus, U. S. P., B. P. See Colchicum.

Colchici Semina, B. P. See Colchicum.

Colchicina, U. S. P. See Colchicine.

Colchicine* $C_{22}H_{25}NO_6$.

Color and properties: Yellow crystalline alkaloid or amorphous powder; poisonous.

Constants: Melting-point $142.5^\circ C$.

Soluble in water, alcohol and ether.

Derivation: From *Colchicum autumnale* by extraction and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Colchicum (Meadow saffron; Autumn crocus; Wild saffron; Meadow crocus).

Derivation: Dried corm of *Colchicum autumnale*.

Habitat: Central and Southern Europe and North Africa.

Grades: Technical; U. S. P.; B. P.

Containers: Bales.

Uses: Medicine; extraction of colchicine.

Colcothar. A red oxide of iron made by calcining copperas.

Colemanite. A natural hydrous borate of calcium, $2\text{CaO} \cdot 3\text{B}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$. The commonest source of borax in the United States, California and Oregon.

Colic Root. See Galangæ.

Collargol* (Argentum Credé; Colloidal silver).

Derivation: Soluble silver in finely divided form.

Grades: Pure.

Containers: Glass bottles.

Uses: Antiseptic.

Fire hazard: None.

Railroad shipping regulations: None.

Collaurin* (Colloidal gold).

Derivation: Soluble gold in finely divided form.

Grades: Pure.

Containers: Glass bottles.

Uses: Antiseptic.

Fire hazard: None.

Railroad shipping regulations: None.

Collodion* (Pyroxylin; Flexible collodion)

Derivation: Solution of nitrated cellulose (mixture of trinitrocellulose and tetranitrocellulose) in ether and alcohol or other solvent.

Color and properties: Pale-yellow, sirupy liquid; very inflammable.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles; iron drums.

Uses: Photographic films; cementing; coating wounds and abrasions; manufacturing patent leather; solvent for drugs; corn removers.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label

Collodion Cotton. See Nitrocellulose.

Collodion Wool. See Nitrocellulose.

Colledium, U. S. P., B. P. See Collodion

Colloidum Cantharidatum, U. S. P. Cantharidal collodion.

Colloidum Flexile, U. S. P. See Collodion.

Colloidal Gold. See Collaurin.

Colloidal Silver. See Collargol.

Colloxylin. See Nitrocellulose.

Colocynth (Bitter apple; Bitter cucumber; Bitter gourd).

Derivation: Peeled dried fruit of *Citrullus colocynthis*.

Habitat: Mediterranean region, Asia and Africa.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Colocynthis, U. S. P., B. P. See Colocynth.

Cologne Spirits. A very pure grade of Ethyl alcohol.

Colophony* (Common rosin).

Derivation: A resin obtained by the distillation of turpentine oil from crude turpentine.

Constants: Specific gravity 1.08; melting-point 100°-140°C.

Grades: "Virgin"; yellow dip; hard. Rosin is graded B, C, D, E, F, G, H, I, K, L, M, N, W-G (window-glass), W-W (water-white). The grading is done by color, B being the darkest and W-W the lightest rosin. Ordinarily the first three grades, B, C and D are not separated. Occasionally (e.g. in the case of rosin used for shrapnel) factors other than color are considered in the grading, such as the acidity and the melting-point.

Containers: Barrels.

Uses: The darker grades, B, C and D are used for making rosin oil, and also in the manufacture of linoleum and dark varnishes; E, F and G, (especially F) are used for making size for the paper industry; the grades G to K are used in the manufacture of soap, depending on the quality of the soap being made; for some fine soaps even lighter grades are occasionally used; the grades higher than K (especially W-G and W-W) are used for making light varnishes; sealing wax; munitions (shrapnel); adulterating other resins; fastening cutlery into handles; increasing the friction of the horsehair of the bows of musical string instruments; soldering flux.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Columbian Spirits. See Methyl alcohol.

Columbite. A natural, variable columbate and tantalate of iron and manganese containing preponderant columbium and grading into tantalite, in which tantalum preponderates. Colorado, Connecticut, Maine, North Carolina, South Dakota, and Virginia.

Columbium (Niobium) Cb. A rare metal, related to vanadium and tantalum, occurring in nature in the form of columbates, in columbite and other rare minerals.

Columbo. See Calumba.

Columnian Spirits. See Methyl alcohol.

Colza Oil. See Rape-seed oil.

Conchinine. See Quinidine.

Condensite.* A synthetic resin produced by condensing phenol and formaldehyde.

Condor Vine. See Condurango.

Condurango (Cundurango; Eagle vine; Mata-perro; Condor vine).

Derivation: Bark of *Gonolobus condurango*.

Habitat: Ecuador and Peru.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Condy's Liquid. A solution of sodium permanganate.

Cone Flower. See Echinacea.

Conhydrine* (Oxyconiine) $C_8H_{17}NO$.

Color and properties: Colorless crystalline alkaloid; poisonous.

Constants: Melting-point 120.6°C.; boiling-point 220°-225°C.

Soluble in alcohol and ether and chloroform; slightly soluble in water.

Derivation: By extraction of the seeds *Conium maculatum* and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.
Railroad shipping regulations: None.

Conhydrine, Pseudo $C_8H_{17}NO$.

Color and properties: Colorless crystalline alkaloid; poisonous.

Constants: Melting-point 101° - $102^{\circ}C$.; boiling-point $230^{\circ}C$.

Soluble in water alcohol, ether and benzol.

Derivation: By extraction of seeds of *Conium maculatum* and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Coniine* $C_8H_{17}N$.

Color and properties: Colorless, oily liquid alkaloid; mousy odor; poisonous.

Constants: Melting-point $-2.5^{\circ}C$.; boiling-point $166^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By extraction of *Conium maculatum* and subsequent distillation.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Coniine Hydrochloride $C_8H_{17}N.HCl$.

Color and properties: White crystals; poisonous.

Constants: Melting-point 208° - $210^{\circ}C$.

Soluble in water and alcohol; insoluble in ether.

Derivation: By the action of hydrochloric acid on coniine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Conium* (Hemlock; Poison hemlock;

Spotted hemlock; Poison parsley; Spotted cowbane).

Derivation: Full grown, but unripe carefully dried fruit of *Conium maculatum*.

Habitat: Europe, Asia and United States.

Grades: Technical; U. S. P.

Containers: Boxes.

Uses: Medicine; extraction of coniine.

Fire hazard: None.

Railroad shipping regulations: None.

Consumptive's Weed. See *Eriodictyon***Convallaria*** (Lily-of-the-valley; May lily; Park lily; May blossom).

Derivation: Dried rhizome and roots of *Convallaria "majalis."*

Habitat: United States, Europe and Northern Asia; cultivated in U. S.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Convolvulus Scoparius. See *Rhodium*.**Copaiba** (Jesuits' balsam; Balsam copaiba; Balsam capivi).

Color and properties: Transparent, viscous, light-yellow to brownish-yellow liquid; peculiar odor.

Constants. Specific gravity 0.940-0.990.

Soluble in alcohol, ether, chloroform, benzol and carbon bisulfide; insoluble in water.

Derivation: The oleoresin from one or more South American species of *Copaiba*.

Habitat: Brazil, Venezuela and Colombia.

Grades: Technical; U. S. P.

Containers: Iron drums.

Uses: Medicine; varnishes; brightening old paintings.

Fire hazard: None.

Railroad shipping regulations: None.

Copaiba Oil.

Color and properties: Colorless or

pale-yellowish liquid; characteristic odor; aromatic, bitterish, pungent taste.

Chief known constituents: Chiefly sesquiterpenes.

Constants: Specific gravity 0.895-0.905; boiling-point 250° - 275° C.; optical rotation -7 to -35 .

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the so-called balsam of copaiba.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Copal (Gum Copal, Resin Copal, Animé, Kaurie, Cowrie).

Color and properties: Yellowish to yellowish-brown lumps of varying size; hard or soft in consistency; conchoidal fracture; odorless and tasteless.

Chief constituents: Trachylolic acid, resene, dammaran.

Habitat: Zanzibar (both fossil and recent), Manila, West Indies and Australia.

Soluble in oil of turpentine and linseed oil, after fusion. Hard copals are almost insoluble in the usual solvents. Soft copals are partly soluble in alcohol, chloroform and glacial acetic acid.

Grades: Technical.

Containers: Tins; bags.

Uses: Varnishes; cements; amber substitute.

Fire hazard: None.

Railroad shipping regulations: None.

Copernicia. See Caruauba.

Copper* Cu.

Color and properties: Reddish, lustrous, flexible, ductile, malleable, hard metal; sometimes found native. See also Azurite, Azurmalachite, Beaverite, Bornite, Brochantite, Chalcantite, Chalcocite, Chalcopyrite, Chrysocolla, Covellite, Cuprite, Enargite, Famatinite, Freibergite, Gold-

fieldite, Linarite, Malachite, Melanconite, Stromeyerite, Tennantite, Tenorite and Tetrahedrite.

Constants: Specific gravity 8.96; melting-point 1083° C.; boiling-point 2310° C.

Soluble in hot concentrated sulfuric acid, hot concentrated nitric acid and dilute nitric acid; slightly soluble in dilute sulfuric acid, ammonium hydroxide and organic acids; very slightly soluble in hydrochloric acid; insoluble in cold concentrated nitric acid, water and alcohol.

Derivation: By roasting the ore to drive off sulfur and other volatile matter, the oxide remaining. This is reduced with carbon and a siliceous flux in a puddling furnace or cupola, furnishing the "matte" of commerce containing 40 to 50 per cent of copper. The matte is bessemerized in a converter, "poled" with wood to remove occluded gases, yielding "blister" copper, containing 96 to 98 per cent of the metal. This is melted and cast into "anode" plates for electrolytic refining.

Method of purification: The electrolytic refining is carried out by the "series system" in which one side of the anode plate serves as anode and the other as cathode. After a suitable amount of pure metal has been deposited on the cathode side, the plates are "stripped," i.e. the remaining anode material is split off. The cathode metal is melted and cast into ingots of varying sizes. These ingots are 99.99 to 99.94 per cent pure, and are the usual commercial form of copper for the metal-working industries.

Grades: Electrolytic; cast.

Containers: Freight cars.

Uses: Electrical equipment; chemical apparatus and equipment; copper salts; brass, bronze and other alloys; metallurgy; roofing; cooking utensils; coinage.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Abietinate* (Cupric abietinate)
($\text{C}_{19}\text{H}_{27}\text{O}_2$)₂.

Color and properties: Green scales; poisonous.
Soluble in alcohol, and in oils, with fine green color; insoluble in water.
Derivation: By heating copper hydroxide with abietinic acid.
Grades: Technical.
Containers: Kegs.
Uses: Wood preservative.
Fire hazard: None.
Railroad shipping regulations: None.

Copper Acetate* (Cupric acetate; Green verdigris; Crystallized verdigris)
 $\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$.

Color and properties: Greenish-blue, fine powder; poisonous.

Constants: Specific gravity 1.9; melting-point: Decomposes at 240°C .

Soluble in water, alcohol and ether.

Derivation: By the action of acetic acid on copper and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Wooden barrels; kegs.

Uses: Medicine, insecticide; textiles; ceramics; reagent in analytic chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Acetate, Basic* (Copper subacetate; Green verdigris)
 $\text{CuO} \cdot \text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: Greenish-blue, very fine powder; poisonous.

Soluble in water, alcohol and acids.

Derivation: By the action of acetic acid on copper.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Paint pigment; insecticide; dyeing and printing fabrics.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Acetoarsenite* (Cupric acetoarsenite; Paris green; Schweinfurth green; Imperial green)
 $3\text{CuOAs}_2\text{O}_5 \cdot \text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2$.

Color and properties: Emerald-green powder; poisonous.

Soluble in acids; insoluble in alcohol and water.

Derivation: By boiling copper basic acetate with arsenic trioxide.

Grades: Technical.

Containers: Wooden kegs.

Uses: Pigment; insecticide.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Aminosulfate. See Copper-ammonium sulfate.

Copper-Ammonium Sulfate* (Cupric-ammonium sulfate; Amino-cupric sulfate; Copper aminosulfate)
 $\text{CuSO}_4 \cdot 4\text{NH}_3 \cdot \text{H}_2\text{O}$.

Color and properties: Dark blue, crystalline powder.

Constants: Melting-point: Decomposes.

Soluble in water; insoluble in alcohol.

Derivation: By dissolving copper sulfate in ammonium hydroxide and precipitating with alcohol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Calico printing; manufacturing copper arsenate; insecticide "azutin"

Fire hazard: None.

Railroad shipping regulations: None.

Copper Arsenite* (Cupric arsenite; Copper ortho-arsenite; Scheele's green) CuHAsO_3 .

Color and properties: Fine, light-green powder; poisonous.

Constants: Melting-point: Decomposes.

Soluble in acids; insoluble in water.

Derivation: By the interaction of copper sulfate and sodium arsenite.

Grades: Technical.

Containers: Wooden kegs.

Uses: Pigment; insecticide.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Borate* (Cupric borate) CuBO_3 .
Color and properties: Bluish-green, crystalline powder.

Soluble in water.

Derivation: By the interaction of copper hydroxide and boric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Kegs; tins.

Uses: Oil pigment; painting on porcelain.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Carbonate* (Cupric carbonate; Artificial green malachite; Mountain green; Brunswick green; Bremen green; Verditer green)
 $\text{Cu}_2(\text{OH})_2\text{CO}_3$.

Color and properties: Green powder; poisonous.

Constants: Specific gravity 3.7-4.0.

Soluble in acids; insoluble in water.

Derivation: By adding sodium carbonate to a solution of copper sulfate, filtering and drying.

Grades: Technical.

Containers: Wooden barrels.

Uses: Pigments; pyrotechnics.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Chlorate* (Cupric chlorate)

$\text{Cu}(\text{ClO}_3)_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: Bluish-green, deliquescent crystals; poisonous. Keep dry.

Constants: Melting-point 65°C .

Soluble in water and alcohol.

Derivation: By the interaction of copper hydroxide and chloric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Mordant in dyeing and printing fabrics.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Copper Chloride* (Cupric chloride)

(a) CuCl_2 ; (b) $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: (a) Yellow

powder; (b) Greenish-blue, deliquescent crystals; poisonous.

Constants:

| | (a) | (b) |
|------------------|---------------------|------|
| Specific gravity | 3.854 | 2.47 |
| Melting-point | 498°C} | .... |

Soluble in water.

Derivation: (a) By the union of copper and chlorine. (b) Copper carbonate is dissociated with hydrochloric acid and the product is crystallized.

Grades: Technical.

Containers: Wooden barrels.

Uses: Mordant in dyeing and printing fabrics; sympathetic ink; aniline dyes; oxidizing agent; disinfectant.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Chromate* (Basic cupric chromate) $\text{CuCrO}_4 \cdot 2\text{CuO} \cdot 2\text{H}_2\text{O}$.

Color and properties: Light chocolate-brown powder; poisonous.

Soluble in nitric acid; insoluble in water.

Derivation: By the action of chromic acid on copper hydroxide.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Cyanide* (Cupric cyanide)

$\text{Cu}(\text{CN})_2$.

Color and properties: Green powder; exceedingly poisonous; Keep well stoppered!

Soluble in acids and alkalis; insoluble in water.

Derivation: By the addition of potassium cyanide to a solution of copper sulfate, cupric cyanide is precipitated. This is dried, but is not stable and gives off cyanogen, leaving cuprous cyanide.

Grades: Technical.

Containers: Barrels; kegs.

Uses: Metallurgy.

Fire hazard: None.

Railroad shipping regulations: None.

Copper, Electrolytic.* Copper refined

by electrolysis. The purest form of copper available.

Copper Fluoride* (Cupric fluoride)

$\text{CuF}_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: Blue crystals; poisonous.

Soluble in water, alcohol and acids.

Derivation: By decomposing copper carbonate with hydrofluoric acid and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Ceramics; enamels.

Fire hazard: None.

Railroad shipping regulations: None.

Constants:
Specific Gravity
Melting-point

(a)

2.174

114.5°C

(b)

2.074

26.4°C

Soluble in water and alcohol.

Derivation: By treating copper or copper oxide with nitric acid. The solution is evaporated and product recovered by crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Medicine; preparation of light sensitive papers for reproductive processes.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Copper Fluosilicate. See Copper silico-fluoride.

Copper Glance. See Chalcocite.

Copper Hydrate. See Copper hydroxide.

Copper Hydroxide* (Cupric hydroxide; Hydrated copper oxide; Copper hydrate) $\text{Cu}(\text{OH})_2$.

Color and properties: Blue powder; poisonous.

Constants: Specific gravity 3.368; melting-point: Decomposes.

Soluble in acids; insoluble in water.

Derivation: By the interaction of a solution of a copper salt and an alkali.

Grades: Technical.

Containers: Wooden kegs.

Uses: Copper salts; pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Monoxide. See Copper oxide, Black.

Copper Nitrate* (Cupric nitrate)

(a) $\text{Cu}(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$;

(b) $\text{Cu}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: Blue, deliquescent crystals; poisonous.

Copper Oleate* (Cupric oleate)

$\text{Cu}(\text{C}_{18}\text{H}_{35}\text{O}_2)_2$.

Color and properties: Brown powder or greenish-blue mass; poisonous.

Soluble in ether; insoluble in water.

Derivation: (a) By the interaction of copper sulfate and sodium oleate. (b)

By dissolving 10 per cent copper oxide in oleic acid.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Ortho-arsenite. See Copper arsenite.

Copper Oxide, Black* (Cupric oxide, Copper monoxide) CuO .

Color and properties: Brownish-black, amorphous powder.

Constants: Specific gravity 6.32; melting-point 1064°C.

Soluble in acids; insoluble in water.

Derivation: By the ignition of copper carbonate or copper nitrate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Producing green or blue colors on glass, faience, porcelain and stoneware; reagent in analytic chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Oxide. Hydrated. See Copper hydroxide.

Copper Oxide, Red* (Cuprous oxide)



Color and properties: Reddish-brown crystalline powder.

Constants: Specific gravity 5.75-6.09; melting-point 1210°C .; boiling-point 1800°C .

Soluble in acids and alkalis; insoluble in water.

Derivation: (a) By the oxidation of finely divided copper. (b) By the addition of bases to cuprous chloride. (c) By the action of glucose on cupric hydroxide.

Grades: Technical.

Containers: Wooden barrels.

Uses: Copper salts; ceramics; porcelain red glaze; red glass; electroplating.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Phosphide* (Cuprous phosphide)



Color and properties: Grayish-black, metallic powder.

Constants: Specific gravity 6.67.

Soluble in acid; insoluble in water.

Derivation: By heating copper and phosphorus.

Grades: Technical.

Containers: Wooden kegs.

Uses: Manufacturing phosphor bronze.

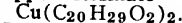
Fire hazard: None.

Railroad shipping regulations: None.

Copper Precipitate. Trade name for copper used in electrolytic processes.

Copper Pyrites. See Chalcopyrite.

Copper Resinate* (Cupric resinate)



Color and properties: Green powder; poisonous.

Soluble in ether and oils; insoluble in water.

Derivation: By heating copper sulfate and rosin oil and filtering and drying the precipitate.

Grades: Technical.

Containers: Wooden kegs.

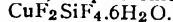
Uses: Preservative metal paint, particularly for ships' bottoms.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Copper Silicide. See Silicon-copper.

Copper Silicofluoride* (Cupric fluosilicate; Cupric silicofluoride)



Color and properties: Blue, hygroscopic crystals; poisonous.

Constants: Specific gravity 2.182.

Soluble in water; slightly soluble in alcohol.

Derivation: By the interaction of copper hydroxide and hydrofluosilicic acid.

Method of purification: Crystallization.

Grades: Technical.

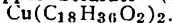
Containers: Wooden kegs.

Uses: Dyeing and hardening white marble; treating grape vines for "white disease."

Fire hazard: None.

Railroad shipping regulations: None.

Copper Stearate* (Cupric stearate)



Color and properties: Light blue, amorphous powder; poisonous.

Soluble in ether, chloroform, benzol and turpentine; insoluble in water.

Derivation: By the interaction of copper sulfate and sodium stearate.

Grades: Technical.

Containers: Wooden kegs; tins.

Uses: Bronzing plaster statues.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Subacetate. See Copper acetate, Basic.

Copper Subcarbonate. See Copper carbonate, Green.

Copper Suboxide. See Copper oxide, Red.

Copper Sulfate* (Cupric sulfate; Blue vitriol; Blue stone) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$.

Color and properties: Blue crystals, slowly efflorescing in air; almost white when dehydrated; poisonous. Found in nature as chalcantinite.

Constants: Specific gravity 2.284.

Soluble in water and alcohol.

Derivation: By the action of dilute sulfuric acid on copper or copper oxide in large quantities, with evaporation and crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Wooden barrels.

Uses: Textile industry; leather industry; germicides; insecticides; pigments; electric batteries; electrolytic baths; copper salts; metallurgy; hair dyes; reagent in analytical chemistry; medicine. The anhydrous salt is used as a dehydrating agent.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Sulfide (Cupric sulfide) CuS .

Color and properties: Grayish-blue powder or lumps; found as such in nature.

Constants: Specific gravity 3.18-4.16 melting-point 1100°C .

Soluble in nitric acid; insoluble in water.

Derivation: By passing hydrogen sulfide gas into a solution of a copper salt.

Grades: Technical.

Containers: Wooden barrels.

Uses: Copper metal; protective paint for vessels.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Sulfide (Cuprous sulfide) Cu_2S .

Color and properties: Black powder or lumps; found as such in nature.

Constants: Specific gravity 5.52-5.82.

Soluble in nitric acid; insoluble in water.

Derivation: By heating cupric sulfide in a stream of hydrogen.

Grades: Technical.

Containers: Wooden barrels.

Uses: Copper metal; protective paint for vessels.

Fire hazard: None.

Railroad shipping regulations: None.

Copper Trisalyt. Trade name for a copper sulfate preparation used in electroplating.

Copperah Oil. See Copra oil.

Copperas. See Ferrous sulfate.

Copra.

Derivation: The dried meat of coco-nut. Obtained from the South Sea Islands and the East Indies.

Grades: Cebu; Java; Macassar; South Sea; spot, sundried Pacific coast and Padang.

Containers: Bags.

Uses: For the extraction of coco-nut oil; confectionery; food.

Fire hazard: None.

Railroad shipping regulations: None.

Copra Oil* (Copperah oil; Coco-nut oil, not the same as coco-nut palm oil; often erroneously called cocoa-nut oil).

Color and properties: White, wax-like, semi-solid; somewhat disagreeable odor; mild taste.

Chief constituents: Trymyristin and trilaurin.

Constants: Specific gravity 0.910-0.926; melting-point $23^\circ\text{-}27^\circ\text{C}$; iodine number 8-9; saponification value 251-268; refractive index 1.441.

Soluble in alcohol and ether; insoluble in water.

Derivation: From the dried meat of the coco-nut, *Cocos nucifera*, by boiling and pressing.

Method of purification: Decolorization with bone-black or fullers' earth.

Grades: Technical.
Containers: Boxes; wooden barrels.
Uses: Soap; candles; food; medicine.
Fire hazard: Dangerous.
Railroad shipping regulations: None.
See also Coco-nut oil.

Coptis (Gold thread).
Derivation: Roots of *Coptis trifolia*.
Habitat: Canada, South to Maryland; Minnesota.
Grades: Technical.
Containers: Bales.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Coquina. A porous, coarse limestone composed of fragments of marine shells.
Florida.

Cordierite (Iolite, Water sapphire). A natural magnesium-iron-aluminum silicate. Sometimes used as a gem. Colorado, Connecticut.

Coriander.
Derivation: Dried, ripe fruit of *Coriandrum sativum*.
Habitat: Asia and Europe.
Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine; condiment.
Fire hazard: None.
Railroad shipping regulations: None.

Coriander Oil.
Color and properties: Colorless or slightly yellowish liquid; characteristic, aromatic odor; warm, spicy taste.
Chief known constituents: Linalol; pinene.
Constants: Specific gravity 0.863-0.878; refractive index 1.4665.
Soluble in alcohol, ether and chloroform.
Derivation: Distilled from the fruit of *Coriandrum sativum*.
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine; flavoring compounds.

Fire hazard: None.
Railroad shipping regulations: None.

Coriandrum, U. S. P.; B. P. See Coriander.

Corn. In U. S.: Indian corn or maize; in England: oats or other grain.

Corn Oil* (Maize oil).
Color and properties: Pale-yellow liquid; characteristic taste.
Constants: Specific gravity 0.920-0.925; saponification value 188-193; iodine value 111-123.
Soluble in ether, chloroform, amyl acetate benzol and carbon bisulfide.
Derivation: The germ of common corn (Indian corn, *Zea mays*) is removed from the grain and pressed.
Method of purification: Filtration.
Grades: Crude; refined.
Containers: Wooden barrels; tank cars.
Uses: Foodstuffs; soap; lubricants; leather dressing; rubber substitutes; lard substitutes (by hydrogenation).
Fire hazard: None.
Railroad shipping regulations: None.

Corn Sugar. See Dextrose.

Cornish Stone. A partially weathered feldspar, used as a flux and fusible ingredient in porcelain and tiles.

Coronadite. A natural manganate of lead and manganese (Mn, Pb) Mn_3O_7 . Resembles psilomelane in general aspect. Arizona.

Corozo-nut oil. See Cohune oil.

Corrosive Sublimate. See Mercuric chloride.

Corundum (Aluminum oxide) Al_2O_3 . The clear colored varieties form the gems, sapphire, ruby, oriental emerald, and oriental topaz; the granular impure variety is known as emery. Ala-

bama, California, Colorado, Connecticut, Delaware, Georgia, Idaho, Massachusetts, Montana, Nevada, New York, North Carolina, Oregon, Pennsylvania, South Carolina, Virginia, and Wyoming.

Corypha. See Carnauba.

Cosalite. A natural sulfide of lead and bismuth, $Pb_2Bi_2S_3$. Contains 42 per cent bismuth. Colorado, Utah and Washington.

Cosmoline. See Petrolatum.

Cotarninae Hydrochloridum, U. S. P.
See Cotarnine hydrochloride.

Cotarnine Hydrochloride* (Stypticin)

$C_{12}H_{14}NO_3Cl$.

Color and properties: White crystals; poisonous.

Constants: Melting-point 142° - $144^{\circ}C$.

Soluble in water and alcohol.

Derivation: By the action of hydrochloric acid on the alkaloid.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cotton Ball. See Ulexite.

Cotton-root Bark. See Gossypium bark.

Cotton-seed Oil* (Seed oil).

Color and properties: Pale yellow or yellowish-brown to dark ruby-red or black-red liquid, fixed, non-drying oil depending on the nature and condition of the seed.

Constants: Specific gravity 0.922-0.930; saponification value 191-196; iodine value 101-116.

Soluble in ether, benzol, chloroform and carbon bisulfide.

Derivation: The seeds of the cotton plant (*Gossypium herbaceum*), are crushed in a mill, the meal is heated in iron kettles at 75° - $90^{\circ}C$. and pressed in cloths, under 3000-4000 lb.

per sq. in. The press cake is sold as a cattle food. The oil, after settling, is refined by being heated with a solution of caustic soda, to separate the foots. The sediment of "foots" containing lye, coloring matter and albuminous bodies, settle to the bottom. The "foots" are used for soap. The cottonseed oil is clarified by filtration. On standing, or by chilling below $12^{\circ}C$., the palmitin and stearin in part crystallize and are removed by pressing. This solid fat is known as "cotton-seed stearno" and is used in making oleomargarine.

Method of purification: Filtration.

Grades: Crude; refined; prime summer yellow; bleachable.

Containers: Barrels; tank cars.

Uses: Medicine; leather dressing; soap stock; food product; lubricant; producing carron oil.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Couch Grass. See Triticum, page 510.

Coumarin* (Cumarin; Tonka bean camphor; Cumaric anhydride) $C_9H_6O_2$.

Color and properties: Colorless crystals, flakes or powder; fragrant odor.

Constants: Melting-point $67^{\circ}C$; boiling-point $290^{\circ}C$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: (a) By heating salicylic aldehyde, sodium acetate and acetic anhydride. (b) Fine grades are sometimes isolated from Tonka beans.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Flavoring; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Coumarouna Bean. See Tonka.

Coumarone. See Para-coumarone.

Covellite. A natural indigo-blue copper sulfide, CuS . Contains 66.4 per cent

copper. Alabama, Arizona, Colorado, Georgia, Idaho, Montana, Nevada, South Carolina, Utah and Wyoming.

Cowrie. See Copal.

Cramp Bark. See *Viburnum opulus*.

Cranberry Tree. See *Viburnum opulus*.

Cranes-bill. See *Geranium*.

Cream of Tartar. See Potassium bitartrate.

Creosote, Beechwood.*

Color and properties: Colorless or faintly yellow, oily liquid; characteristic smoky odor; caustic, burning taste.

Constants: Specific gravity 1.080; boiling-point 205°-220°C.

Soluble in water, alcohol and ether.

Derivation: A mixture of phenols and phenol derivatives obtained by the destructive distillation of wood-tar, preferably that of *Fagus sylvatica* or *Fagus ferruginea*.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums; blue bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Creosote, Coal-tar.*

Color and properties: Yellowish to dark green-brown, oily liquid; clear at 38°C. or higher; characteristic odor; poisonous. Frequently contains substantial amounts of naphthalene and anthracene.

Constants: Specific gravity 1.03-1.10; distilling range 200°-400°C.

Soluble in alcohol, benzol and toluol.

Derivation: (a) Directly by the fractional distillation of coal-tar; (b) By redistillation of a coal-tar fraction; (c) A coal-tar oil from which the phenols and naphthalene have been partly extracted; (d) A mixture of two or more coal-tar fractions.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; tank cars.

Uses: Wood preservative; disinfectants.

Fire hazard: Dangerous

Railroad shipping regulations: None.

Creosoti Carbonas, U. S. P. The carbonate of beechwood creosote.

Creosotum, U. S. P., B. P. See Creosote, Beechwood.

Cresol, Meta.* (Meta-cresylic acid; Meta-oxytoluene; Meta-methylphenol; Cresylic acid) $\text{CH}_3\text{C}_6\text{H}_4\text{OH}$.

Color and properties: Colorless to yellowish liquid; phenol-like odor; poisonous.

Constants: Specific gravity 1.0419; melting-point 10.9°C.; boiling-point 202°C.

Soluble in alcohol, ether and chloroform; slightly soluble in water.

Derivation: By fractional distillation of crude cresol.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Disinfectant; production of synthetic resins; photographic developer; nitrocresol explosives.

Fire hazard: None.

Railroad shipping regulations: None.

Cresol, Ortho.* (Cresyl alcohol; Ortho-cresylic acid; Ortho-oxytoluene; Ortho-methyl-phenol) $\text{CH}_3\text{C}_6\text{H}_4\text{OH}$.

Color and properties: White crystals; phenol-like odor; poisonous.

Constants: Specific gravity 1.0511; melting-point 30.4°C.; boiling-point 191°C.

Soluble in alcohol, ether and chloroform; slightly soluble in water.

Derivation: By fractional distillation of crude cresol.

Method of purification: Crystallization.

Grades: Technical.

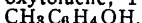
Containers: Iron drums.

Uses: Disinfectant; coumarin.

Fire hazard: None.

Railroad shipping regulations: None.

Cresol, Para-* (Para-cresylic acid; Para-oxytoluene; Para-methyl phenol)



Color and properties: Crystalline mass; phenol-like odor; poisonous.

Constants: Specific gravity 1.039; melting-point 36°C .; boiling-point 202°C .

Soluble in alcohol, ether and chloroform; slightly soluble in water.

Derivation: (a) By fractional distillation of crude cresol. (b) By fusing para-toluenesulfonic acid with potassium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron drums.

Uses: Disinfectant; cresotinic acid; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Cresotic Acid. See Acid cresotic.

Cresotinic Acid. See Acid cresotic.

Cresylic Acid. See Cresol.

Cresylol. See Cresol.

Creta Praeparata, U. S. P., B. P. See Calcium carbonate.

Crimson Antimony. See Antimony sulfide.

Crispmint (Balm mint; Curled mint; Cross mint).

Derivation: Leaves of *Mentha crispa*.

Habitat: Germany.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Crocoite. Natural lead chromate, $\text{PbO} \cdot \text{CrO}_3$. Contains 68.9 per cent PbO and 31.1 per cent CrO_3 . Arizona.

Crocus (Saffron; Spanish saffron; French saffron).

Derivation: Stigmas of *Crocus sativus*.

Habitat: Western Asia, France and Spain.

Grades: Technical.

Containers: Boxes.

Uses: Medicine; coloring; flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Crocus Antimony. Antimony oxide, Brown.

Crocus Martis. See Ferric hydroxide.

Crocus Martis Adstringens. See Ferric oxide, Red.

Crocus Metallorum. Antimony oxide, Brown.

Crocus, Polishing. See Ferric oxide, Red.

Cross Mint. See Crispmint.

Croton. See Tiglium, page 510.

Croton Oil.*

Color and properties: Brownish-yellow liquid; poisonous.

Constants: Specific gravity 0.940-0.960.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: By expression from the seeds of *Croton tiglium*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Croton Tiglium. See Tiglium, page 510.

Crotonic Acid. See Acid crotonic.

Crotonolic Acid. See Acid tiglic.

Crown Bark. See Cinchona bark, Loxa.

Crude Oil. See Petroleum.

Cryolite (Cryolith, Kryolith). A natural fluoride of sodium and aluminum, $3\text{NaF} \cdot \text{AlF}_3$. Colorado and Greenland.

Cryptopine* $C_{21}H_{28}NO_5$.

Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point 217°C .

Soluble in chloroform and boiling alcohol; insoluble in water and ether.

Derivation: From opium, by extraction and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Crystallöse. See Sodium benzosulfonide.

Crystolon* (Silicon carbide) SiC .

Color and properties: Green to bluish-black, iridescent, porous, crystalline, sharp-grained platelets or mass.

Constants: Specific gravity 3.12-3.20.

Derivation: By heating a mixture of coke, sand, shale and sawdust in the electric furnace.

Grades: Grains, from 10 mesh to finest powders.

Containers: Kegs.

Uses: Abrasive; grindstones; hones; sharpening-stones; anti-slip pavements; grinding wheels; refractories.

Fire hazard: None.

Railroad shipping regulations: None.

Cuba Wood. See Fustic wood.

Cubeb. See Cubeba.

Cubeb Oil.

Color and properties: Colorless pale-greenish or yellowish liquid; characteristic odor of cubebs; warm camphoraceous taste.

Chief known constituents: Cadinene; dipentene.

Constants: Specific gravity 0.905-0.925; boiling-point 175° - 280°C ; refractive index 1.49-1.496; optical rotation -25 to -40 .

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the unripe fruit of Piper cubeba.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cubeba (Cubebs; Tailed pepper; Java pepper).

Derivation: Dried, unripe, but fully grown fruit of Piper cubeba.

Habitat: Southern Asia (Java, Borneo and Sumatra); cultivated in Ceylon and West Indies.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cubebae Fructus, B. P. (Cucurbitae semina praeparate; Melon pumpkin seeds).

Derivation: Fresh ripe seeds of cultivated plants of Cucurbitae maxima.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulation: None.

Cubic Niter. See Sodium nitrate.

Cubic Saltpeter. See Sodium nitrate.

Cuca. See Cacao.

Cucumber Oil* (Gourd oil).

Color and properties: Greenish-yellow, fixed, drying oil; faint red fluorescence.

Constants: Specific gravity 0.923; melting-point -16°C ; saponification value 188.7; iodine number 121.

Soluble in alcohol, ether and benzol; insoluble in water.

Derivation: From the seeds of the cucumber, pumpkins, etc., by pressing.

Containers: Glass bottles; tins; iron drums.

Grades: Technical.

Uses: Medicine; illumination; fuel.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Cucurbita. See Pepo.

Cudbear. See Orchil, page 506.

Cuenca Bark. See Cinchona bark, Loxa.

Culvers. See Leptandra.

Cumar* A proprietary brand of para-coumarone resin.

Cumaric Anhydride. See Coumarin.

Cumaron. See Para-coumarone.

Cumene* (Isopropylbenzene; Trimethylbenzene; Cumol) $C_6H_5CH(CH_3)_2$. Color and properties: Colorless liquid. Constants: Specific gravity 0.8620; boiling-point $152.7^\circ C$.

Soluble in alcohol, ether and benzol; insoluble in water.

Derivation: (a) By the interaction of benzol and isopropyl iodide. (b) By distilling cuminic acid. (c) By the interaction of benzal chloride and zinc methyl.

Method of purification: Rectification. Grades: Technical.

Containers: Iron drums; glass bottles. Uses: Sterilizing catgut; organic synthesis; solvent.

Fire hazard: None.

Railroad shipping regulations: None.

Cumidine* (Pseudocumidine; Trimethylaminobenzene) $C_6H_2(CH_3)_3NH_2$ 1:2:4:5.

Color and properties: White crystals. Constants: Melting-point $62^\circ C$; boiling-point $236^\circ C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating crude xyldine with methyl alcohol and hydrochloric acid in an autoclave. The pure cumidine is separated from the product by means of its sparingly soluble, crystalline nitrate.

Grades: Technical.

Containers: Wooden barrels.

Uses: Manufacture of dyestuffs; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Cumin (Cummin).

Derivation: Fruit of *Cuminum cyminum*.

Habitat: Mediterranean region and Northern Africa.

Grades: Technical.

Containers: Boxes.

Uses: Medicine; flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Cumin Oil.

Color and properties: Colorless or yellowish, limpid liquid; characteristic odor of cumin; sharp spicy taste.

Chief known constituents: Cumene; cumic aldehyde.

Constants: Specific gravity 0.900-0.930; optical rotation $+4$ to $+8$.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the fruit of *Cuminum cyminum*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; flavoring; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Cummin. See Cumin.

Cumol. See Cumene.

Cundurango. See Condurango.

Cupferron* (Ammonium-nitroso-beta-phenylhydroxylamine)
 $C_6H_5.N.NO.ONH_4$.

Color and properties: Creamy-white crystals.

Soluble in water, alcohol and ether.

Derivation: By treating an ethereal solution of beta-phenylhydroxylamine with dry ammonia gas and amyl nitrite.

Method of purification: Recrystallization.

Grades: Pure.

Containers: Glass bottles.

Uses: Reagent in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Cupric Salts. See corresponding Copper salts.

Cupri Sulfas, U. S. P., B. P. See Copper sulfate.

Cuprite. A natural red copper oxide, Cu_2O . Contains 88.8 per cent copper. Arizona, California, Colorado, Connecticut, Idaho, Missouri, Montana, Nevada, New Jersey, New Mexico, North Carolina, Oregon, Pennsylvania, Tennessee, South Dakota, Utah, Virginia and Wyoming.

Cupro-Magnesium. An alloy of copper and magnesium.

Cupro-Tungsten. An alloy of copper and tungsten.

Cupro-Vanadium.* An alloy of copper and vanadium possessing great toughness.

Cupro-Vanadium-Aluminum.* An alloy of copper, vanadium and aluminum.

Cuprous Salts. See corresponding Copper salts.

Curacao Aloes. See Aloes, Barbadoes.

Curcuma (Turmeric; Curry; Indian saffron).

Derivation: Rhizome of *Curcuma longa*.

Habitat: China, East Indies and many tropical countries.

Grades: Technical.

Containers: Burlap bags.

Uses: Medicine; coloring foodstuffs; condiment (curry powder); textile dyeing; indicator in analytic chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Curled Mint. See Crispmint.

Cuscus Oil. See Vetiver oil.

Cusparia. See Angostura.

Cusso. See Koussou.

Cutch. See Catechu.

Cuttle-fish Bone. See Sepia.

Cyanoacetic Acid. See Acid cyanacetic.

Cyanamide. See Calcium cyanamide.

Cyanegg. A proprietary brand of egg-shaped lumps of sodium cyanide.

Cyangran. A proprietary brand of granular sodium cyanide.

Cyanite (Disthene). A mineral identical in chemical composition with andalusite and sillimanite, $\text{Al}_2\text{O}_3 \cdot \text{SiO}_2$, but differing in crystal form. Generally in flat-bladed pieces. Sometimes used as a gem. Delaware, Massachusetts and North Carolina.

Cyanogen* C_2N_2 .

Color and properties: Colorless gas; pungent penetrating odor; burns with a purple-tinged flame; Extremely poisonous.

Constants: Specific gravity 1.8064 (compared to air); liquefaction-point 21°C ; solidification-point -34°C .

Soluble in water, alcohol and ether.

Derivation: Potassium cyanide solution is slowly dropped into copper sulfate solution; mercury cyanide is heated.

Grades: Technical; pure.

Containers: Liquefied cyanogen: Iron cylinders.

Uses: Organic synthesis; poison gas in warfare.

Fire hazard; Dangerous.

Railroad shipping regulations: Cannot be shipped by railroad.

Cyanogen Chloride* CNCl .

Color and properties: Colorless liquid; poisonous!

Constants: Melting-point -5°C ; boiling-point 13°C .

Soluble in water, alcohol and ether.

Derivation: By the action of chlorine on moist sodium cyanide suspended in carbon tetrachloride and kept cooled to -3°C , followed by distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron cylinders.

Uses: Organic synthesis; manufacture of military poison gases.

Fire hazard: None.

Railroad shipping regulations: None.

Cyanogen Iodide. See Iodine cyanide.

Cyan Salt. Made by fusing ferrocyanide with sodium carbonate.

Cyanuric Acid. See Acid cyanuric.

Cyclobutane. See Naphthenes.

Cyclopentane. See Naphthenes.

Cyclopropane. See Naphthenes.

Cydonia (Quince seed).

Derivation: Seed of *Cydonia vulgaris*.

Habitat: Southern Asia and Europe;

widely cultivated.

Grades: Technical.

Containers: Bags; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cymene* (Cymol, Isopropyltoluene, Para-cymol, Para-methylpropylbenzene) $\text{CH}_3\text{C}_6\text{H}_4\text{CH}_2\text{CH}_2\text{CH}_3$.

Color and properties: Colorless, transparent liquid; aromatic odor.

| Constants: | Ortho- | Meta- | Para- |
|------------------|---------|---------|---------|
| Specific gravity | 0.8748 | 0.862 | 0.8551 |
| Melting-point | -18.2°C | -23°C | -73.5°C |
| Boiling-point | 181°C | 175.6°C | 176.5°C |

Soluble in alcohol, ether and chloroform; insoluble in water.

Derivation: Obtained as a by-product in sulfite digestion of spruce pulp in paper manufacture.

Method of purification: Washing with sulfuric acid, water and alkali.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; solvent; synthetic rubber manufacture; preparation of carvacrol; metal polishes.

Fire hazard: None.

Railroad shipping regulations: None.

Cymol. See Cymene.

Cypress Oil.*

Color and properties: Pale-yellow liquid; characteristic odor.

Chief known constituents: Pinene; cymene; valeric acid; camphene cypress camphor.

Constants: Boiling-point 160°-250°C.; optical rotation +4 to +31.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the fresh leaves and tender shoots of *Cypressus sempervirens*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cypripedium* (Lady's slipper; American valerian; Nerve root; Noah's ark; Yellow moccasin flower).

Derivation: Dried rhizome and roots of *Cypripedium hirsutum*.

Habitat: Nova Scotia south to Alabama and west to Nebraska and Missouri.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Cyrtolite. A yellowish to brownish mineral containing zirconia, yttria, ceria, and other rare earths. Found in pegmatites. New York, North Carolina and Texas.

Cystamin. See Hexamethylenetetramine.

Cystogen. See Hexamethylenetetramine.

Cytisine* (Ulexine) $\text{C}_{11}\text{H}_{14}\text{N}_2\text{O}$.

Color and properties: Colorless, yellowish-white crystals.

Constants: Melting-point 152°-153°C.

Soluble in water and alcohol; insoluble in ether.

Derivation: By extraction of the seeds of *Cytisus laburnum* and many other Papilionaceae and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

D

Dahlin. See Inulin.

Dammar. See Gum dammar.

Damson, Bitter. See Simaruba bark.

Dandelion. See Taraxacum, page 510.

D'Arcet Metal. See Metal, Fusible, D'Arcet.

Dark Ruby Silver. See Pyrargyrite.

Datolite. A natural hydrous silicate of boron and calcium,
 $\text{H}_2\text{O} \cdot 2\text{CaO} \cdot \text{B}_2\text{O}_3 \cdot 2\text{SiO}_2$. Used as a gem. Michigan.

Daturae Folia.

Derivation: Dried leaves of *Datura fastuosa* and other species of *Datura*.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Daturae Semina.

Derivation: Dried seeds of *Datura fastuosa*.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Daturine. See Atropine.

Dead Oil (Heavy oil). The oil, with a density greater than that of water, obtained in the distillation of coal-tar.

Decocta. U. S. P. and B. P. term for decoctions, the liquid produced by boiling one or more drugs in water and filtering.

Deer's Tongue. See *Liatris*.

Degras.* (Sod oil).

Color and properties: Dark-brown unctuous fat; disagreeable odor.

Derivation: Crude grease obtained by washing sheep's wool.

Soluble in alcohol, ether and benzol.

Grades: Technical.

Containers: Wooden barrels.

Uses: Leather stuffing; belt dressing compound; producing lanolin.

Fire hazard: None.

Railroad shipping regulations: None.

Degras, Moellon.*

Derivation: A by-product of the tannage of chamois leathers by impregnation with cod or menhaden fish oils. An oxidation of a part of the fatty acids of the oils takes place. When the tannage is complete, the excess of the oil contained in the skins is pressed out. This, when compounded forms the moellon degreas of commerce.

Grades: Anhydrous; 20 per cent water; 30 per cent water; 35 per cent water.

Containers: Wooden barrels.

Uses: Stuffing leathers; belt dressing.

Fire hazard: None.

Railroad shipping regulations: None.

Dehydrothio-para-toluidine (Amino-benzenyl-ortho-aminothiocresol)

$\text{C}_7\text{H}_6\text{NSCC}_6\text{H}_4(\text{NH}_2)1:4$.

Color and properties: Long, yellowish, iridescent needles. Solutions have a violet-blue fluorescence.

Constants: Melting-point 191°C ; boiling-point 434°C .

Soluble in alcohol; very slightly soluble in water.

Derivation: By heating para-toluidine and primuline base with sulfur and separation from the primuline base by distillation in vacuo.

Method of purification: Crystallization.

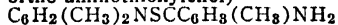
Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dehydrothioxylidine (Aminotoluenyl-ortho-aminothioxylanol)

Color and properties: Yellowish white prisms.

Constants: Melting-point 107°C .; boiling-point 283°C .

Soluble in hot alcohol; insoluble in water.

Derivation: By heating meta-xylidine with sulfur. The product is distilled in vacuo and separated from the isohydrothioxylidine formed by extraction with hydrochloric acid.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Delphinine* $\text{C}_{22}\text{H}_{35}\text{NO}_6$

Color and properties: White, crystalline alkaloid; poisonous.

Constants: Melting-point 119°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By extraction from the seeds of Delphinium staphisagria.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Delphinium (Staphisagria; Larkspur).

Derivation: Ripe seed of Delphinium staphisagria.

Habitat: Mediterranean basin; cultivated in France and Italy.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Denatured Alcohol. See Ethyl alcohol.**Denver Mud.** See Kaolin cataplasms.

Deodorized Oils. Oils which have been subjected to hydrogenation or other treatment to remove objectionable

odors, in order to make them fit for human consumption.

Depilatories. Sodium, potassium or barium sulfides used for the removal of hair. The leather industry uses large amounts of sodium sulfide as a dehairing agent. See Sodium sulfide.

Dermatol. See Bismuth subgallate.

Descloizite. A natural vanadate of lead and zinc. Arizona, New Mexico and South America.

Devil's Apple. See Stramonium.

Dextrin* (British gum; Gommeline; Starch gum; Artificial gum; Vegetable gum).

Color and properties: Yellow or white amorphous, powder or granules.

Soluble in water; insoluble in alcohol and ether.

Derivation: By heating dry starch to 200° to 250°C . in a revolving iron cylinder over a free flame, or in an oil bath, or in a steam-jacketed kettle; or the starch may be moistened with nitric or hydrochloric acid, dried at 50°C . and the heated to 140° - 170°C ., giving a lighter colored product. The dextrin is powdered in a mill and sieved through a bolting cloth. Dextrin is prepared from the following starches: Cassava, corn, potato, sago or wheat.

Grades: Technical, yellow and white; granulated; precipitated by alcohol.

Containers: Bags; wooden barrels.

Uses: Adhesives; textile printing; brewing; confectionery; thickening tanning extracts; sizing paper and textiles; pharmacy; substitute for gum arabic.

Fire hazard: None.

Railroad shipping regulations: None.

Dextrine, Cassava.*

Derivation: A dextrine prepared from cassava starch.

Grades: Technical.

Containers: Bags; barrels.

Uses: Adhesives; textile printing, confectionery, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Dextroglucose. See Dextrose.

Dextrose* (Glucose; Dextroglucose; Grape sugar; Corn sugar; Corn sirup)
 $C_6H_{12}O_6$.

Color and properties: White amorphous anhydrous lumps or powder or thick sirupy liquid.

Soluble in water.

Derivation: From cane sugar by inversion and from starch and starchy substances by action of mineral acids.

Impurities: Dextrin; gallsin.

Grades: Technical.

Containers: Bags; barrels.

Uses: Manufacturing wine and confectionery; preparing tobacco; chrome tanning liquors.

Fire hazard: None.

Railroad shipping regulations: None.

Dextrotartaric Acid. See Acid tartaric.

Diabase A basic igneous rock usually occurring in dikes or intrusive sheets, and composed essentially of plagioclase feldspar and augite with small quantities of magnetite and apatite. The plagioclase forms lath-shaped crystals lying in all directions among the dark irregular augite grains, giving rise to the peculiar diabasic or ophitic texture, which is a distinctive feature in the coarser-grained occurrences. Canada, Connecticut, Maryland, Massachusetts, Newfoundland, New Jersey, New York and Virginia.

Diacetylmorphina, U. S. P., B. P. See Diacetylmorphine

Diacetylmorphinae Hydrochloridum, U. S. P., B. P. Diacetylmorphine hydrochloride.

Diacetylmorphine* (Heroin)

$C_{17}H_{17}NO(C_2H_5O_2)_2$.

Color and properties: White crystalline alkaloid; poisonous; habit-forming drug.

Constants: Melting-point $173^\circ C$.

Soluble in alcohol.

Derivation: By the acetylation of morphine.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Medicine (The hydrochloride, produced by the action of hydrochloric acid, is also extensively used).

Fire hazard: None.

Railroad shipping regulations: None.

Diacetyltannin* (Tannigen; Acetyltannin) $C_{14}H_8(COCH_3)_2O_9$.

Color and properties: Yellowish-white amorphous, odorless, tasteless powder.

Soluble in alcohol; insoluble in water.

Derivation: By the acetylation of tannin.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Diamalt* The proprietary name for a brand of diastase.

Diaminoazotoluene* (Diaminoazotoluol; Azoxytoluidene)
 $C_6H_3(CH_3)(NH_2)_2OC_6H_3(NH_2)(CH_3)$.

Color and properties: Yellow or orange crystals.

Constants: Melting-point $168^\circ C$.

Soluble in alcohol; insoluble in water.

Derivation: By alkaline reduction of para-nitro-ortho-toluidine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminobenzene. See Phenylenediamine.

Diaminobenzol. See Phenylenediamine.

Diaminodiphenic Acid. See Acid diaminodiphenic.

Diaminodiphenyl. See Benzidine.

Diaminodiphenylamine.

$\text{HN}(\text{C}_6\text{H}_4\text{NH}_2)_2$ 1:4.

Color and properties: Yellowish crystals.

Constants: Melting-point 158°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the reduction of the blue indamine obtained by the oxidation of the hydrochlorides of aniline and para-phenylenediamine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminodiphenylethylene. See Diaminostilbene, Para-.

Diaminodiphenylmethane

$\text{NH}_2\cdot\text{C}_6\text{H}_4\cdot\text{CH}_2\cdot\text{C}_6\text{H}_4\cdot\text{NH}_2$.

Color and properties: Large silvery crystals.

Constants: Melting-point 86°C .

Soluble in water, alcohol, ether and benzol.

Derivation: By heating formaldehyde anilide with aniline hydrochloride and aniline.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminodiphenylthiourea

$\text{C}_6\text{H}_4(\text{NH}_2)\text{NH}:\text{C}_6\text{H}_4(\text{NH}_2)\text{NH}\cdot\text{CS}$

Color and properties: Colorless plates or crystalline solid.

Constants: Melting-point 195°C .

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By boiling para-phenylenediamine with carbon bisulfide.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminodiphenylurea

$\text{C}_6\text{H}_4(\text{NH}_2)(\text{NH}):\text{C}_6\text{H}_4(\text{NH}_2)(\text{NH})$

Color and properties: Colorless plates.

Soluble in alcohol and hot water; sparingly soluble in cold water.

Derivation: By the reduction of tetranitrodiphenylurea.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminoditolylmethane

$\text{NH}_2\text{C}_7\text{H}_6\text{CH}_2\text{C}_7\text{H}_6\text{NH}_2$.

Color and properties: Glistening, crystalline plates.

Constants: Melting-point 149°C .

Soluble in alcohol and ether.

Derivation: By heating formaldehyde and ortho-toluidine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminoethoxydiphenyl. See Ethoxybenzidine.

Diaminonaphthalene* (Naphthalenediamine) $\text{C}_{10}\text{H}_6(\text{NH}_2)_2$.

Color and properties: Colorless crystals.

Constants: Melting-point 190°C ; boiling-point sublimes.

Soluble in alcohol and hot water; very sparingly soluble in cold water.

Derivation: (a) By the reduction of alpha-dinitronaphthalene. (b) By heating dioxynaphthalene with aqueous ammonia.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

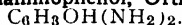
Fire hazard: None.

Railroad shipping regulations: None.

Diaminonaphthalenedisulfonic Acid. See Acid diaminonaphthalenedisulfonic.

Diaminonaphthalenesulfonic Acid. See Acid diaminonaphthalenesulfonic.

Diaminophenol, Ortho-.*



Color and properties: Gray-white crystals.

Constants: Melting-point 49°C .; boiling-point 299°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the reduction of dinitrophenol.

Method of purification: Crystallization.

Grades: Technical.

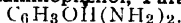
Containers: Wooden barrels; glass bottles.

Uses: Photographic developer; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminophenol, Para-*



Color and properties: Gray-white crystals.

Constants: Melting-point 53°C .; boiling point 302°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By the reduction of dinitrophenol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels; glass bottles.

Uses: Photographic developer; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminophenol Hydrochloride* (Amidol) $\text{C}_6\text{H}_3(\text{NH}_2)_2\text{OH}\cdot 2\text{HCl}$.

Color and properties: Grayish-white crystals.

Soluble in water; slightly soluble in alcohol.

Derivation: By the interaction of diaminophenol and hydrochloric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Kegs; boxes; glass bottles.

Uses: Photographic developer.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminostilbene, Para-* (Diaminodiphenylethylene)



Color and properties: Colorless needles or plates.

Constants: Melting-point 227°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the reduction of dinitrostilbene.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Preparation of dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Diaminostilbenedisulfonic Acid. See Acid diaminostilbenedisulfonic.

Diaminotoluene. See Toluylenediamine, Meta-.

Diaminotoluol. See Toluylenediamine, Meta-.

Diaminoditolyl. See Tolidin.

Diammonium Ortho-phosphate. See Ammonium phosphate.

Diamyl Ether. See Amyl oxide, page 503

Diamylene. See Dipentene.

Dianisidine* $(\text{C}_6\text{H}_3(\text{OCH}_3)\text{NH}_2)_2$
1:3:4.

Color and properties: White crystals.

Constants: Melting-point 137°C .

Soluble in alcohol and ether.

Derivation: The methyl ether of ortho-nitrophenol is reduced by zinc dust and caustic soda to the hydrazo compound which is then boiled with hydrochloric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Diarsenol. A proprietary brand of salvarsan.

Diastase.*

Color and properties: Yellowish-white to brownish-yellow amorphous powder.

Soluble in water.

Derivation: An amylolytic enzyme extracted from wheat and barley malt, which converts insoluble into soluble sugars, and starch into reducing sugars.

Grades: Technical; U. S. P.

Containers: Wooden kegs.

Uses: Fermentation processes; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Diastase, Taka* (Koji).

Color and properties: Whitish-yellow, very hygroscopic powder; converts over 100 times its weight of starch into maltose.

Derivation: An amylolytic enzyme produced by the action of *Aspergillus oryzae* on rice.

Grades: Technical.

Containers: Wooden kegs.

Uses: Fermentation agent.

Fire hazard: None.

Railroad shipping regulations: None.

Diastasum, U. S. P. See Diastase.

Diastofor. The proprietary name for a product used as a diastatic ferment.

Diatomaceous Earth. See Kieselgur.

Diax. The proprietary name for a product used as a diastatic ferment.

Diazoaminobenzene* (Diazoaminobenzol; Diazobenzeneanilide, Benzene-azoanilide) $C_6H_5N.N.NHC_6H_5$.

Color and properties: Golden-yellow scales. Explodes on heating.

Constants: Melting-point $96^\circ C$.

Soluble in alcohol, ether and benzol; insoluble in water.

Derivation: By the interaction of nitrous acid and an alcoholic solution of aniline.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Diazoaminobenzol. See Diazoaminobenzene.

Diazobenzeneanilide. See Diazoaminobenzene.

Diazobenzenesulfonic Acid. See Acid diazobenzenesulfonic, Para-.

Dibromoanthracene* (Alpha-dibromoanthracene) $C_{14}H_8Br_2$.

Color and properties: Yellow crystals.

Constants: Melting-point $221^\circ C$; boiling-point: Sublimes.

Soluble in chloroform; slightly soluble in alcohol and ether; insoluble in water.

Derivation: By the bromination of anthracene.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Dibromoethane. See Ethylene bromide.

Dibromobenzene, Para- (Benzene dibromide, Para-) $C_6H_4Br_2$.

Color and properties: Colorless crystals.

Constants: Melting-point $89^\circ C$; boiling-point $219^\circ C$.

Soluble in alcohol and ether.

Derivation: Obtained by the interaction of benzol with an excess of bromine in presence of a little iron.

Method of purification: Crystallization.

Impurities: Monobromobenzene.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Dibromobenzol. See Dibromobenzene, Para-.

Dibromoisobutane. See Butylene isobromide.

Dibromoketone* $\text{CH}_3\text{COCHBrCH}_2\text{Br}$.
A military poison gas used in the late war.

Dicalcium Ortho-phosphate. See Calcium phosphate, Dibasic.

Dichlorobenzene. See Dichlorobenzene.

Dichlorobenzol. See Dichlorobenzene.

Dichlorethane. See Ethylene chloride.

Dichlorhydrin. See Dichlorohydrin, Alpha.

Dichloroacetic Acid. See Acid dichloroacetic.

Dichlorobenzaldehyde $\text{C}_6\text{H}_4\text{Cl}_2\text{CHO}$.
Color and properties: White crystals. Soluble in alcohol and ether.
Derivation: By the chlorination of benzaldehyde in presence of iodine or antimony.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden barrels; tins.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Dichlorobenzene* (Dichlorobenzol)

$\text{C}_6\text{H}_4\text{Cl}_2$.

Color and properties: Ortho: Colorless liquid; Meta-: Colorless liquid; Para-: White crystals; volatile.

| Constants: | Ortho- | Meta- | Para- |
|------------------|--------|-------|---------|
| Specific gravity | 1.3254 | 1.307 | 1.2675 |
| Melting-point | 14°C | -18°C | 53°C |
| Boiling-point | 179°C | 172°C | 173-7°C |

Solubilities: Ortho-: Soluble in alcohol; insoluble in water.

Meta-: Soluble in alcohol and ether; insoluble in water.

Para-: Soluble in alcohol, ether and benzol; insoluble in water.

Derivation: By the further chlorination of monochlorobenzene.

Method of purification: Rectification.
Containers: Iron drums; wooden barrels.

Grades: Technical.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dichlorobenzidine

$\text{C}_6\text{H}_3\text{ClNH}_2:\text{C}_6\text{H}_3\text{ClNH}_2$.

Color and properties: Crystalline solid.

Constants: Melting-point 133°C.

Soluble in alcohol and ether.

Derivation: By the chlorination of diacetylbenzidine and subsequent saponification.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Dichlorobenzol. See Dichlorobenzene.

Dichlorodiethyl Sulfide* (Mustard gas; Yperite; Yellow cross gas; H. S.)
 $(\text{CH}_2\text{ClCH}_2)_2\text{S}$. A military poison gas used in the late war.

Dichloroethane. See Ethylene chloride.

Dichloroether* (Dichloroethyl oxide)

$\text{CH}_2\text{ClCHClOC}_2\text{H}_5$.

Color and properties: Colorless, inflammable liquid.

Constants: Specific gravity 1.174; boiling-point 140°-145°C.

Soluble in alcohol and ether.

Derivation: By the chlorination of ethyl ether.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Dichloroethylarsine* $\text{AsC}_2\text{H}_5\text{Cl}_2$. A military poison gas used in the late war.

Dichloroethyl Oxide. See Dichloroether.

Dichlorohydrin, Alpha-* (Alpha-propenyldichlorohydrin; Glycerin dichlorohydrin; Dichloroisopropyl alcohol) $\text{CH}_2\text{ClCH}(\text{OH})\text{CH}_2\text{Cl}$.

Color and properties: Colorless, ethereal liquid.

Constants: Specific gravity 1.396; boiling-point 174°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By the interaction of glycerin and dry hydrochloric acid gas and subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Solvent for hard resins and nitrocellulose; manufacture of photographic lacquers, cement for celluloid; binder for water colors; organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Dichloroisopropyl Alcohol. See Dichlorohydrin, Alpha-.

Dichloromethane. See Methylene chloride.

Dichloromethyl Ether* $(\text{CH}_2\text{Cl})_2\text{O}$. A military poison gas used in the late war.

Dichlorophthalic Acid. See Acid dichlorophthalic.

Dicyanodiamide* $\text{NH}_2\text{C}(\text{NH}_2)\text{NHCN}$. Color and properties: Grayish-white powder.

Constants: Melting-point $204^\circ\text{--}205^\circ\text{C}$.

Soluble in water and alcohol; sparingly soluble in ether.

Derivation: By heating cyanamide to 150°C .

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Fertilizers.

Fire hazard: None.

Railroad shipping regulations: None.

Didymium. See Praseodymium and Neodymium.

Didymium Nitrate.*

Color and properties: Violet-red, hygroscopic crystals. Recent chemical investigations show that didymium nitrate consists of a mixture of praseodymium and neodymium nitrates.

Derivation: From monazite sand extraction, after removal of cerium and thorium.

Grades: Technical.

Containers: Wooden kegs.

Uses: Incandescent gas mantles.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Diethylacetal. See Acetal.

Diethylaldehyde. See Acetal.

Diethylamine* $(\text{C}_2\text{H}_5)_2\text{NH}$.

Color and properties: Volatile, colorless, inflammable, strongly alkaline liquid.

Constants: Specific gravity 0.710; boiling-point 56°C .

Soluble in water and alcohol.

Derivation: By the interaction of dilute potassium hydroxide and dinitrodiethylaniline or nitrosodiethylaniline.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Diethylaniline* $(\text{C}_2\text{H}_5)_2\text{NC}_6\text{H}_5$.

Color and properties: Yellowish to brownish inflammable liquid.

Constants: Specific gravity 0.9351; melting-point -38° to -39°C ; boiling-point 213.5°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: (a) By heating aniline, aniline hydrochloride and ethyl alcohol. (b) By heating ethyl bromide, aniline and caustic soda in an autoclave.

Method of purification: Rectification.

Grades: Technical.
Containers: Iron drums.
Uses: Organic synthesis.
Fire hazard: Dangerous.
Railroad shipping regulations: None.

Diethylbarbituric Acid. See Veronal.

Diethylenediamine. See Piperazine.

Diethylglycocolguaiacol Hydrochloride.
See Gujasanol.

Diethylketone* (Metacetone; Propione; Ethyl propionyl) $C_2H_5COC_2H_5$.
Color and properties: Colorless, mobile, inflammable liquid; acetone-like odor.
Constants: Boiling-point $101^\circ C$.
Soluble in alcohol and ether.
Derivation: By distilling sugar with an excess of lime.
Method of purification: Rectification.
Grades: Technical.
Containers: Iron drums; glass bottles.
Uses: Medicine; organic synthesis.
Fire hazard: Dangerous.
Railroad shipping regulations: Red label.

Diethylmalonylurea. See Veronal.

Diethyl Sulfate* $(OC_2H_5)_2SO_2$.
Color and properties: Colorless, liquid; ethereal odor; irritating after-effect.
Constants: Specific gravity 1.185; boiling-point $208^\circ C$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of fuming sulfuric acid on ethyl alcohol.
Method of purification: Rectification in vacuo.
Grades: Technical.
Containers: Iron drums.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Diethyl Sulfide. See Ethyl sulfide.

Diethylsulfonedimethylmethane. See Sulfonal.

Diethylsulfonemethylethylmethane. See Sulfoneethylmethane.

Diffuorodiphenyl $C_6H_4F.C_6H_4F$.
Color and properties: Colorless, crystalline powder; aromatic odor.
Constants: Specific gravity 1.04; melting-point $88^\circ-89^\circ C$; boiling-point $254^\circ-255^\circ C$.
Soluble in alcohol, ether, chloroform and oils; insoluble in water.
Derivation: By passing gaseous hydrofluoric acid into the product of the reaction of an excess of piperidine on diazotized benzidine.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Digallic Acid. See Acid tannic.

Digitalin* $C_{35}H_{56}O_{14}$
Color and properties: Coarsely granular, crystalline glucoside; poisonous.
Constants: Melting-point: Decomposes above $235^\circ C$. without melting.
Soluble in water and in a mixture of alcohol and chloroform slightly soluble in alcohol; insoluble in ether.
Derivation: From *Digitalis purpurea*.
Method of purification: Crystallization.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Digitalis* (Fox-glove; Purple fox-glove; Fairy gloves).
Derivation: Dried leaves of *Digitalis purpurea*.
Habitat: Southern and Central Europe; cultivated in the U. S.
Grades: Technical; U. S. P.; B. P.
Containers: Boxes.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Digitalis Folia. B. P. term for *Digitalis* leaves.

Digitoxin* $C_{28}H_{46}O_{10}$.
Color and properties: White, crystalline glucoside; poisonous. On boiling with dilute acids it is decomposed

into digitoxose, $C_6H_{12}O_4$, and digitoxigenin, $C_{22}H_{32}O_4$.

Soluble in alcohol, chloroform and a mixture of glycerin, alcohol and water; slightly soluble in ether; insoluble in water.

Derivation: By extraction from *Digitalis purpurea*.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Dihydrated Telluric Hydroxide. See Acid telluric.

Dihydroxyanthraquinone. See Quinazarin.

Dihydroxynaphthalene. See Dioxynaphthalene.

Dihydroxyphthalophenone. See Phenolphthalein.

Dihydroxystearic Acid. See Acid dihydroxystearic.

Diiodoaniline* (Meta-diiodoaniline)

$C_6H_3I_2NH_2$.

Color and properties: Shining, brown crystals.

Constants: Melting-point $96^\circ C$.

Soluble in alcohol, ether, chloroform, acetic ether and carbon bisulfide; insoluble in water.

Derivation: By the action of iodine chloride on acetanilide, followed by saponification and distillation with steam.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Diiododithymol. See Thymol iodide.

Diiodoform* (Ethylene tetraiodide; Ethylene periodide; Iodoethylene)

C_2I_4 .

Color and properties: Fine, yellow, odorless needles.

Constants: Melting-point $187^\circ C$.

Soluble in chloroform, benzol, toluol and carbon bisulfide; slightly soluble in alcohol and ether; insoluble in water.

Derivation: From acetylene iodide with an excess of iodine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Diiodomethane. See Methylene iodide.

Dilem Leaf Oil.

Color and properties: Thick liquid, yellowish-green oil; patchouli-like odor.

Constants: Specific gravity 0.962; boiling-point $250^\circ C$ - $300^\circ C$.

Soluble in alcohol, ether; benzol and chloroform.

Derivation: Distilled from a Javanese plant, the botanical origin of which is unknown.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Dill. See Anethum.

Dill Oil.*

Color and properties: Pale yellow, volatile, essential oil; characteristic penetrating odor; sweetish taste, rapidly becoming sharp and burning.

Chief known constituents: Limonene and carvol.

Constants: Specific gravity 0.905-0.915; optical rotation $+70^\circ$ to $+80^\circ$.

Soluble in alcohol, ether, benzol and chloroform.

Derivation: Distilled from the fruit of *Anethum graveolens*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Flavoring agent; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Dimagnesium Ortho-phosphate. See Magnesium phosphate.

Dimagnesium Phosphate. See Magnesium phosphate.

Dimethylacetal* (Ethylidenedimethyl ester) $\text{CH}_3(\text{OCH}_2)_2\text{CH}$.

Color and properties: Colorless, inflammable liquid; strongly aromatic odor.

Constants: Specific gravity 0.879; boiling-point $62^\circ\text{--}63^\circ\text{C}$.

Soluble in water, alcohol, ether and chloroform.

Derivation: By heating aldehyde with methyl alcohol and glacial acetic acid, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Medicine; organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Dimethyl-alpha-naphthylamine

$\text{C}_{10}\text{H}_7\text{N}(\text{CH}_3)_2$.

Color and properties: Clear, oily liquid.

Constants: Boiling-point 273°C .

Soluble in alcohol and ether.

Derivation: By heating alpha-naphthylamine hydrochloride, with methyl alcohol.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Dimethylaminoantipyrene. See Pyridon.

Dimethylaminoazobenzene* (Dimethylaminobenzol; Benzeneazodimethylaniline; Butter yellow)

$\text{C}_6\text{H}_5\text{.N.N.C}_6\text{H}_4\text{.N}(\text{CH}_3)_2$.

Color and properties: Golden-yellow crystalline leaflets.

Constants: Melting-point 116°C .

Soluble in water, alcohol, ether, strong mineral acids and oils.

Derivation: A solution of aniline hydrochloride is diazotized, then added to a solution of dimethylaniline in dilute hydrochloric acid and precipitated by a concentrated solution of sodium acetate.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Coloring butter; indicator in volumetric analysis.

Fire hazard: None.

Railroad shipping regulations: None.

Dimethylaminoazobenzene Sulfonate*

(Sulfobenzeneazodimethylaniline)

$\text{SO}_3\text{H.C}_6\text{H}_4\text{N}_2\text{C}_6\text{H}_4\text{N}(\text{CH}_3)_2$.

Color and properties: Violet crystals or powder.

Soluble in alcohol; slightly soluble in water.

Derivation: By the sulfonation of dimethylaminoazobenzene.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Manufacturing helianthin and related dyes.

Fire hazard: None.

Railroad shipping regulations: None.

Dimethylaminobenzaldehyde, Para.*

$\text{C}_6\text{H}_4(\text{N}(\text{CH}_3)_2)\text{CHO}$ 1:4.

Color and properties: Colorless crystalline plates.

Constants: Melting-point 73°C .

Soluble in hot water, alcohol and ether.

Derivation: By mixing dimethylaniline, anhydrous chloral and phenol and allowing the mixture to stand. The phenol is removed by shaking with dilute caustic soda and the residue dissolved in water and hydrochloric acid and crystallized.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dimethylaminobenzoylpentanol Hydrochloride. See Stovaine, page 509.

Dimethylaniline* $C_6H_5N(CH_3)_2$.

Color and properties: Yellowish to brownish oily liquid.

Constants: Specific gravity 0.954; melting-point $2.5^\circ C$; boiling-point $192.5^\circ - 193.5^\circ C$.

Soluble in alcohol and ether.

Derivation: By heating a mixture of aniline, aniline hydrochloride and methyl alcohol (free from acetone) in an autoclave and distilling.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Dimethylarsenic Acid. See Acid cacodylic.

Dimethylbenzene. See Xylol.

Dimethylbenzol. See Xylol.

Dimethyl-beta-naphthylamine

$C_{10}H_7N(CH_3)_2$.

Color and properties: Crystalline solid.

Constants: Specific gravity 1.008; melting-point $46^\circ C$; boiling-point $305^\circ C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of dimethylamine and beta-naphthol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Dimethyldiphenylurea* (Zentralin)

$(CH_3)_2(C_6H_5)_2CON_2$.

Color and properties: White crystals.

Constants: Melting-point $120^\circ C$.

Soluble in alcohol, ether and benzol; insoluble in water.

Derivation: By saturation of monomethylaniline with carbonyl chloride, removal of benzol by distillation, washing the residue with acid water and crystallizing from alcohol. The crystals are warmed with alcoholic ammonia, diluted with water to precipitate, washed with water, dissolved in alcohol and crystallized.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Stabilizer for smokeless powder, explosives and nitro-compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Dimethyloxyquinizine. See Antipyrine.

Dimethylglyoxime* (Butanone dioxime; Alpha-dimethylglyoxime)

$(CH_3)_2C_2(OH)_2$.

Color and properties: White crystals.

Constants: Melting-point $232^\circ - 233^\circ C$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: (a) By methylating glyoxime which is prepared from glyoxal and hydroxylamine. (b) Sulfur dioxide gas is passed into mixed, supersaturated, cooled solutions of sodium sulfite and nitrite until a water-white solution results. This is warmed on a steam bath for a few hours, cooled and a mixture of ethylmethylketone and ethyl nitrite added, with constant stirring, yielding a curdy precipitate. This is stirred until converted into a mass of crystals. (c) Nitrosomethylethyl ketone is prepared from methylethyl ketone, amyl nitrite and hydrochloric acid and is extracted from the reaction mixing with sodium hydroxide solution under continuous stirring and separation of the amyl alcohol formed. The solution is neutralized with more sodium hydroxide, if necessary, and heated with a freshly prepared hydroxylamine sulfate solution, yielding dimethylglyoxime. The solution is filtered hot, the dimethylglyoxime washed with hot water, dried and crystallized.

Method of purification: Recrystallization.

Grades: Technical; C. P.

Containers: Tins; glass bottles.

Uses: Analytical chemistry, especially as a reagent for nickel.

Fire hazard: None.

Railroad shipping regulations: None.

Dimethylketal. See Acetone.

Dimethylketone. See Acetone.

Dimethylnitrobenzene. See Nitroxy-lene.

Dimethylnitrobenzol. See Nitroxy-lene.

Dimethyl-para-phenylenediamine*

(1 ara-aminodimethylaniline)

$C_6H_4NH_2N(CH_3)_2$.

Color and properties: Brown, crystal-line mass.

Constants: Melting-point $41^\circ C$; boiling-point $257^\circ C$.

Soluble in water, alcohol, ether and benzene.

Derivation: A solution of sodium nitrite is slowly run into a solution of dimethylaniline in hydrochloric acid and water mixed with chopped ice. The nitrosodimethylaniline is reduced with zinc dust. It is then filtered and the filtrate, after concentration, is mixed with caustic soda and extracted with benzol and crystallized.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dimethylpiperazine. See Lupetazine.

Dimethyl Sulfate* (Methyl sulfate)

$(CH_3)_2SO_4$.

Color and properties: Colorless liquid; very poisonous!

Constants: Specific gravity 1.3516; melting-point $-10^\circ C$; boiling-point $188^\circ C$.

Soluble in alcohol; very slightly soluble in water.

Derivation: By adding fuming sulfuric acid to methyl alcohol and distilling in vacuo.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Methylating agent for amines and phenols; military poison gas in the late war.

Fire hazard: None.

Railroad shipping regulations: White label.

Dimethyl Sulfide. See Methyl sulfide.

Dimethyltrithiocarbonate*

$CS_3(CH_3)_2$. A military poison gas used in the late war.

Dimethylxanthine. See Theobromine and Theophylline.

Dimethylenemethane, Alpha-. See Fluorene.

Dinaphthyl-meta-phenylenediamine

$C_{18}H_{14}(NHC_{10}H_7)_2$ 1:3.

Color and properties: Colorless needles.

Constants: Melting-point $191^\circ C$.

Sparingly soluble in alcohol; insoluble in water and ether.

Derivation: By heating meta-phenylenediamine with beta-naphthol and subsequent extraction with alcohol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Dinitroaminophenol. See Acid picramic.

Dinitroaniline* $C_6H_5NH_2(NO_2)_2$.

Color and properties: Yellow crystals.

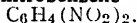
Constants: Specific gravity 1.615; melting-point 187.5° - $188^\circ C$.

Slightly soluble in alcohol, insoluble in water.

Derivation: By the nitration of paranitraniline with hot mixed acid.

Method of purification: Crystallization.

Grades: Technical.
Containers: Wooden barrels.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Dinitrobenzene* (Dinitrobenzol)

Color and properties: Yellow crystals.

| Constants: | Meta- | Ortho- | Para- |
|------------------|--------|--------|------------|
| Specific gravity | 1.546 | 1.565 | 1.587 |
| Melting-point | 80.0° | 117.0° | 372°-373°C |
| Boiling-point | 302.8° | 319° | 299°C |

Soluble in alcohol; slightly soluble in water.

Derivation: By nitration of nitrobenzene with hot mixed acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis; dyestuffs.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Dinitrobenzol. See Dinitrobenzene.

Dinitrobenzylidisulfonic Acid. See Acid dinitrobenzylidisulfonic.

Dinitrochlorobenzene* (Dinitrochlorobenzol) $\text{C}_6\text{H}_3(\text{NO}_2)_2\text{Cl}$

Color and properties: Colorless needles

Constants: Specific gravity 1.69; melting-point 37.1°-53°C.

Soluble in alcohol; insoluble in water.

Derivation: By the chlorination of dinitrobenzene.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron barrels.

Uses: Dyestuffs; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Dinitrochlorobenzol. See Dinitrochlorobenzene.

Dinitronaphthalene*

Color and properties: (a) Yellowish-

white needles; (b) Yellowish-white, thick, crystalline tablets.

Constants: Melting-point (a) 217°C.; (b) 172°C.

(a) Sparingly soluble in pyridine; (b) Soluble in pyridine.

Derivation: By dissolving alpha-nitronaphthalene in sulfuric acid and adding nitric acid. The solution is heated to 80°-90°C. and cooled.

Method of purification: Crystallization.

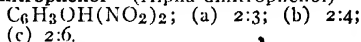
Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Dinitrophenol* (Alpha-dinitrophenol)

Color and properties: Yellow crystalline tablets.

| Constants: | (a) | (b) | (c) |
|------------------|-------|------------|---------|
| Specific gravity | 1.583 | 1.683 | 1.683 |
| Melting point | 144°C | 114°-115°C | 61.78°C |

Soluble in alcohol and ether; slightly soluble in water.

Derivation: (a) By heating phenol with dilute sulfuric acid, cooling the product, and then nitrating, keeping the temperature below 50°C. (b) By nitration with mixed acid with very careful temperature control.

Method of purification: Crystallization.

Grades: Technical.

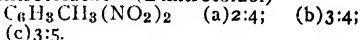
Containers: Wooden barrels.

Uses: Dyestuffs, especially sulfur colors; picric acid; picramic acid.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Dinitrostilbenedisulfonic Acid. See Acid dinitrostilbenedisulfonic.

Dinitrotoluene* (Dinitrotoluol)

Color and properties: Yellow crystals.

| Constants: | (a) | (b) | (c) |
|------------------|--------|------|-------|
| Specific gravity | 1.3208 | 1.32 | 1.32 |
| Melting-point | 70.5°C | 61°C | 2.5°C |

Soluble in alcohol and ether; insoluble in water.

Derivation: By nitration of nitrotoluene with hot nitrosulfuric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic syntheses; toluidins; tolidins; dyestuffs; explosives.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Dinitrotoluol. See Dinitrotoluene.

Dionin* (Ethylmorphine hydrochloride)

$C_{10}H_{23}NO_3 \cdot HCl \cdot 2H_2O$.

Color and properties: White crystalline powder; poisonous.

Constants: Melting-point $125^{\circ}C$.

Soluble in water and alcohol; insoluble in ether.

Derivation: By the action of hydrochloric acid on ethylmorphine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Diopside. A natural calcium-magnesium silicate, $CaMg(SiO_3)_2$. California and Georgia.

Diorite. A granitoid rock composed essentially of hornblende and feldspar which is mostly or wholly plagioclase, with accessory biotite and (or) augite. Minute grains of magnetite and titanite may be visible. Quartz may be present in considerable amount, in which case the rock is called quartz diorite. Quarried for crushed rock in the District of Columbia, Virginia and many other states.

Diosma. See Buchu.

Dioxyanthraquinone, 1:2. See Alizarine.

Dioxyanthraquinone, 1:4. See Quinazarin.

Dioxyanthraquinone* (Anthrarufine)

$C_{14}H_6O_2(OH)_2$ 1:5.

Color and properties: Yellow, crystalline tablets.

Constants: Melting-point $280^{\circ}C$.

Soluble in alcohol; very sparingly soluble in water.

Derivation: By heating anthraquinone with boric acid and sulfuric anhydride.

Method of purification: Crystallization.

Impurities: (Dioxyanthraquinone 1:8; Chrysazine.)

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxyanthraquinone (Chrysazine)

$C_{14}H_6O_2(OH)_2$ 1:8.

Color and properties: Reddish-brown needles.

Constants: Melting-point $191^{\circ}C$.

Soluble in alcohol; sparingly soluble in water.

Derivation: From dinitroanthraquinone (1:8) by reduction and subsequent diazotization.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxybenzene, Meta-. See Resorcinol.

Dioxybenzol, Meta-. See Resorcinol.

Dioxynaphthalene* $C_{10}H_6(OH)_2$ 1:2.

Color and properties: Silvery plates.

Constants: Melting-point $60^{\circ}C$.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By reduction of betanaphthoquinone with sulfurous acid.

Grades: Technical.

Containers: Wooden casks.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxynaphthalene* (Naphthoresorcin) $C_{10}H_6(OH)_2$ 1:3.

Color and properties: Transparent, crystalline plates.

Constants: Melting-point 124°C.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By heating naphthalenedisulfonic acid (1:3) with dilute acids at 230°C. Under pressure.

Grades: Technical.

Containers: Wooden casks.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxynaphthalene* $C_{10}H_6(OH)_2$ 1:5.

Color and properties: White needles.

Constants: Melting-point 260°C.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By fusing naphthalenedisulfonic acid (1:5) with caustic soda.

Grades: Technical.

Containers: Wooden casks.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxynaphthalene* $C_{10}H_6(OH)_2$ 1:6.

Color and properties: White crystalline plates.

Constants: Melting-point 136°C.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By fusing naphthalenedisulfonic acid (1:6) with caustic soda.

Grades: Technical.

Containers: Wooden casks.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxynaphthalene* $C_{10}H_6(OH)_2$ 1:7.

Color and properties: Fine white needles.

Constants: Melting-point 158°C.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By fusing naphthalenedisulfonic acid (1:7) with caustic soda.

Grades: Technical.

Containers: Wooden casks.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxynaphthalene* $C_{10}H_6(OH)_2$ 1:8.

Color and properties: White needles or plates.

Constants: Melting-point 138°C.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: From naphthosulfone by fusion with caustic soda.

Grades: Technical.

Containers: Wooden casks.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxynaphthalene* $C_{10}H_6(OH)_2$ 2:3.

Color and properties: Colorless crystals.

Constants: Melting-point 160°C.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: From beta-naphtholdisulfonic acid R by fusion with caustic soda.

Grades: Technical.

Containers: Wooden casks.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxynaphthalene* $C_{10}H_6(OH)_2$ 2:6.

Color and properties: White, crystalline plates.

Constants: Melting-point 216°C.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: From beta-naphthol-beta-sulfonic acid by fusion with caustic soda.

Grades: Technical.

Containers: Wooden casks.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxynaphthalene* $C_{10}H_6(OH)_2$ 2:7.

Color and properties: Long, white, crystalline needles or plates.

Constants: Melting-point 186°C.

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: From beta-naphtholsulfonic acid F by fusion with caustic soda.

Grades: Technical.

Containers: Wooden casks.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Dioxystearic Acid. See Acid Dihydroxystearic.

Dioxystearinic Acid. See Acid dihydroxystearic.

Dioxysuccinic Acid. See Acid tartaric.

Dioxytoluene. See Orcin, page 507.

Dioxytoluol. See Orem, page 507.

Dioxytriphenylphthalide. See Phenolphthalein.

Dip Oil.* A 25 per cent crude carboic acid used to manufacture cattle-dips and disinfectants.

Di-para-aminodimethoxydiphenyl. See Diamisidine.

Di-para-tolyl-meta-phenylenediamine*

$C_6H_4(NHC_7H_7)_2$ 1:3.

Color and properties: Long needles.

Constants: Melting-point $137^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating resorcin and para-toluidine in presence of zinc chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Di-para-tolynaphthalenediamine*

$C_{10}H_6(NHC_7H_7)_2$ 2:7.

Color and properties: Fine needles.

Constants: Melting-point $237^{\circ}C$.

Sparingly soluble in alcohol; insoluble in water.

Derivation: By heating dioxynaphthalene (2:7) with para-toluidine and para-toluidine hydrochloride.

Method of purification. Crystallization.

Grades: Technical.

Containers: Wooden boxes.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Dipentene* (Diamylene; Cinene; Inactive limonene; Dipentine; Cajeputene; Kautschin) $C_{10}H_{16}$.

Color and properties: Colorless liquid; pleasant, lemon-like odor.

Constants: Specific gravity 0.85; boiling-point 181° - $182^{\circ}C$.

Miscible with alcohol; insoluble in water.

Derivation: From various ethereal oils, particularly Levant wormseed oil.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Extracts.

Fire hazard: None.

Railroad shipping regulations: None.

Dipenteneglycol. See Terpene hydrate.

Dipentine. See Dipentene.

Diphenyl* $C_6H_5:C_6H_5$.

Color and properties: White scales; pleasant odor.

Constants: Specific gravity 0.9845; melting-point $70^{\circ}C$; boiling-point $255^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By slowly passing benzol through a red hot iron tube. (b) By heating bromobenzene and sodium, with subsequent distillation.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diphenylamine* (Phenylaniline)

$(C_6H_5)_2NH$.

Color and properties: Colorless to grayish crystals.

Constants: Specific gravity 1.159; melting-point $52.85^{\circ}\text{C}.$; boiling-point $310^{\circ}\text{C}.$

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By heating equal formula weights of aniline and aniline hydrochloride in an autoclave. The product is boiled with dilute hydrochloric acid to remove the unaltered aniline, and the residue is distilled.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Diphenylethylene. See Stilbene.

Diphenylchloroarsine* $(\text{C}_6\text{H}_5)_2\text{AsCl}$. A military poison gas used in the late war.

Diphenylcyanoarsine* $(\text{C}_6\text{H}_5)_2\text{AsCN}$. A military poison gas used in the late war.

Diphenylimide. See Carbazole.

Diphenylketone. See Benzophenone.

Diphenyl-meta-phenylenediamine*

$\text{C}_6\text{H}_4(\text{NHC}_6\text{H}_5)_2$ 1:3.

Color and properties: Flat crystalline needles.

Constants: Melting-point $95^{\circ}\text{C}.$

Soluble in hot alcohol; insoluble in water.

Derivation: By heating resorcin with aniline in presence of calcium chloride and zinc chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diphenylmethane* (Benzylbenzene)

$(\text{C}_6\text{H}_5)_2\text{CH}_2$.

Color and properties: Long colorless needles.

Constants: Specific gravity 1.0056; melting-point $20.5^{\circ}\text{C}.$; boiling-point $264.7^{\circ}\text{C}.$

Soluble in alcohol and ether; insoluble in water.

Derivation: By condensation of benzyl chloride and benzol in presence of aluminum chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron barrels.

Uses: Organic synthesis; dyestuffs; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Diphenylnaphthylenediamine*

$\text{C}_{10}\text{H}_6(\text{NHC}_6\text{H}_5)_2$ 2:7.

Color and properties: Silvery, crystalline plates.

Constants: Melting-point $164^{\circ}\text{C}.$

Slightly soluble in alcohol; insoluble in water.

Derivation: By heating dioxynaphthalene with aniline and aniline hydrochloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diphenyl Oxide* $(\text{C}_6\text{H}_5)_2\text{O}$.

Color and properties: Colorless crystals.

Constants: Specific gravity 1.0728; melting-point $27^{\circ}\text{C}.$; boiling-point $259^{\circ}\text{C}.$

Soluble in alcohol and ether; insoluble in water.

Derivation: By the reaction of bromobenzene and sodium phenate heated under pressure.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis; perfumery, particularly for soaps.

Fire hazard: None.

Railroad shipping regulations: None.

Diphenylurea* (Carbanilide)

$(\text{NHC}_6\text{H}_5)_2\text{CO}$ $(\text{NHC}_6\text{H}_5)_2$.

Color and properties: Colorless prisms.

Constants: Melting-point $235^{\circ}\text{C}.$; boiling-point $260^{\circ}\text{C}.$

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: From aniline and phenylcyanate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diphosgene. See Trichloromethylchloroformate.

Dipotassium Ortho-phosphate. See Potassium phosphate, Dibasic.

Dippel's Oil. See Bone oil.

Dipping Acid. See Acid sulfuric.

Dipropylenediamine. See Lupetazine.

Dipropylmethane. See Heptane.

Dipterix. See Tonka.

Diresorcin* (Tetroxydiphenyl)
(OH)₂C₆H₃:C₆H₃(OH)₂.
Color and properties: White crystalline powder.

Constants: Melting-point 310°C.

Soluble in hot water and alcohol.

Derivation: By fusing resorcin and phenol with caustic soda.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Diresorcinphthalein. See Fluorescein.

Disodium Ortho-phosphate. See Sodium phosphate, Dibasic.

Disodium Pyrophosphate. See Sodium phosphate, Pyro.

Disthene. See Cyanite.

Ditaine* (Echitamine.)

C₂₂H₂₈N₂O₄.4H₂O.

Color and properties: White, thick, glistening, crystalline alkaloid; poisonous.

Constants: Melting-point 206°C.

Soluble in water and alcohol; very slightly soluble in ether.

Derivation: By extraction from the bark of *Alstonia scholaris*.

Method of purification: Crystallization.

Grades: Technical

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None

Railroad shipping regulations: None.

Dithymol Diiodide. See Thymol iodide.

Divanadyl Tetrachloride. See Vanadium chloride.

Divi Divi Fruit.

Derivation: The fruit of a West Indian tree, *Casalpinia copiaria*. Forms very thin pods about 3 inches in length.

Grades: Technical.

Containers: Burlap bags.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

See also Extract Divi Divi.

Djamboë. See Guava.

Dog-fish Oil. See Shark oil.

Dog-grass. See Triticum, page 510.

Dog-tooth Spar. See Calcite.

Dogwood* (*Cornus florida*; Flowering dogwood).

Derivation: Root bark of *Cornus florida*.

Habitat: Eastern United States and Ontario.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Dolomite. A natural carbonate of calcium and magnesium, $(\text{Ca}, \text{Mg})\text{CO}_3$. Alabama, Connecticut, Indiana, Iowa, Kentucky, Maryland, Rhode Island, Tennessee and Virginia.

Dolphin Oil. See Porpoise oil.

Donovan's Solution. Solution of arsenous and mercuric iodides.

Dover's Powder.

Derivation: Powdered ipecac and opium together with powdered milk sugar.

Grades: Technical; U. S. P.
Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Dragon's Blood.

Color and properties: Deep red, amorphous lumps.

Chief known constituents: Dracoalban, dracoresene, draconine and esters.

Derivation: The resin from the fruit of *Dæmonorops draco*; habitat: South Asiatic Islands.

Grades: Technical.

Containers: Tins; boxes.

Uses: Plasters; lacquers; tooth-powders; pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Drop Chalk. See Calcium carbonate.

Drumstick. See *Cassia fistula*.

Dryopteris. See *Aspidium*.

Dufrenoy'site. A natural sulfarsenide of lead, $\text{Pb}_2\text{As}_2\text{S}_5$. Arizona and Idaho.

Dulcin. See Dulcitol.

Dulcite* (Dulcitol; Melampyrit; Dulcin; Dulcose; Euonymit) $\text{C}_6\text{H}_8(\text{OH})_6$.

Color and properties: White, glistening crystals; slightly sweet taste.

Constants: Melting-point $188^\circ\text{--}189^\circ\text{C}$.

Soluble in water; slightly soluble in alcohol.

Derivation: A sugar from *Melampyrum nemorosum*.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Dulcitol. See Dulcitol.

Dulcose. See Dulcitol.

Duotal. See Guaiacol carbonate.

Durene* (Durol; Symmetrical tetramethylbenzene) $\text{C}_6\text{H}_2(\text{CH}_3)_4$.

Color and properties: Colorless crystals; camphor-like odor.

Constants: Melting-point $79^\circ\text{--}81^\circ\text{C}$;
boiling-point $189^\circ\text{--}191^\circ\text{C}$.

Soluble in alcohol, ether and benzol; insoluble in water.

Derivation: By heating ortho-xylene and methyl chloride in presence of aluminum chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Durol. See Durene.

Dutch Drops. See Haarlem oil.

Dutch Liquid. See Ethylene chloride.

Dutch Metal. A cheap imitation of gold-leaf made of an alloy of copper and zinc.

Dutch Oil. See Haarlem oil.

Dwarf Bay. See Mezereum.

Dwarf Elder. See *Ebulus*.

Dyer's Saffron. See *Carthamus*.

Dyscrasite. A variable, natural silver antimonide, including Ag_2Sb . Arizona.

E

Eagle Vine. See Condurango.

Earth, Diatomaceous. See Kieselgur.

Earth, Infusorial. See Kieselgur.

Earth-nut Oil. See Peanut oil.

Earth, Siliceous. See Kieselgur.

Earth Wax. See Ceresin.

East Indian Balmony. See Chirata.

Eau de Javelle. See Javelle water.

Eau de Labarraque. See Sodium hypochlorite.

Ebonite.* Black, hard, vulcanized rubber used for valves, faucets, pipes, electrical equipment, fountain-pens, toilet articles, handles, etc., made from the cheaper grades of rubber.

Ebulus (Blood elder; bloodwort; Dwarf elder).

Derivation: Fruit, herb and root of *Sambucus ebulus*.

Habitat: Europe.

Grades: Technical.

Containers: Bags; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Echinacea* (Cone flower; Black samson; Purple cone flower.

Derivation: Root of *Echinacea angustifolia*.

Habitat: North America.

Grades: Technical.

Containers: Bags; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Echitamine. See Ditaine.

Eclipse. See Benzopurpurin.

Ecgonine* $C_9H_{15}NO_3 \cdot H_2O$.
Color and properties: White, crystalline alkaloid; levorotatory; poisonous.

Constants: Melting-point $198^\circ C$.

Soluble in water; slightly soluble in alcohol; very slightly soluble in ether.

Derivation: By decomposition of cocaine with hydrochloric acid.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ecgonine Hydrochloride*

$C_9H_{15}NO_3 \cdot HCl$.

Color and properties: White, crystalline tablets; poisonous.

Constants: Melting-point $246^\circ C$; optical rotation -57° .

Soluble in water; slightly soluble in alcohol.

Derivation: By the action of hydrochloric acid on ecgonine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Edible Oils. Vegetable or animal oils, containing not over 0.1 per cent of free fatty acid, used for food purposes (cooking, salad-dressing and manufacture of oleomargarine or other butter substitutes), such as butter oils, deodorized oils, margarine oils, salad oils.

Edinol. A photographic developer composed of aminosaligenineacetone sulfite, potassium hydroxide and potassium bromide.

Egg Oil. See Egg yolk.

Egg Yolk.* (Egg oil).

Derivation: From the eggs of hens, ducks and geese. The yolks are separated from the whites and the yolks are then mixed with common salt;

sometimes a small amount of borax is added as a preservative.
Grades: Technical.
Containers: Wooden barrels.
Uses: Leather dressing; bakeries; soap; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Eglestonite. A natural mercury oxychloride, $\text{Hg}_4\text{Cl}_2\text{O}$. Texas.

Egyptian Privet. See *Henna*.

Eikonogen* (Sodium salt of amino-beta-naphthol-beta-monosulfonic acid)
 $\text{NH}_2\text{C}_{10}\text{H}_5(\text{OH})\text{SO}_3\text{Na} \cdot \frac{1}{2}\text{H}_2\text{O}$.
Color and properties: White powder.
Soluble in water.
Derivation: By the interaction of sodium carbonate and amino-beta-naphthol-beta-monosulfonic acid.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles.
Uses: Photographic developer.
Fire hazard: None.
Railroad shipping regulations: None.

Elastica. See *Caoutchouc*, page 503.

Elaterin* $\text{C}_{20}\text{H}_{28}\text{O}_5$.
Color and properties: White, crystalline powder.
Constants: Melting-point 216°C .
Soluble in water, alcohol, ether, chloroform and benzol.
Derivation: From the juice of *Echallium elaterium*.
Method of purification: Crystallization.
Grades: Technical; U. S. P.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Elaterinum, U. S. P. See *Elaterin*.

Elaterium (White, English or Clutterbuck's elaterium).
Color and properties: Grayish-green, flat or slightly curled small pieces or powder.

Derivation: Sediment from the juice of *Echallium elaterium*.
Partially soluble in hot alcohol.
Grades: Technical.
Containers: Tins.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Elayl Chloride. See *Ethylene chloride*.

Elder. See *Sambucus*, page 509.

Elder, Blood. See *Ebulus*.

Elder, Dwarf. See *Ebulus*.

Elecampane. See *Inula*.

Elecampane Camphor. See *Helenin*.

Electrolon* (Silicon carbide) SiC .
Color and properties: Green to bluish-black, iridescent, porous, crystalline, sharp-grained platelets or mass.
Constants: Specific gravity 3.12-3.20.
Derivation: By heating a mixture of coke, sand, shale and sawdust in the electric furnace.
Grades: Grains, from 10 mesh to finest powders.
Containers: Kegs.
Uses: Abrasive; grindstones; hones, sharpening-stones; anti-slip pavements; grinding wheels; refractories.
Fire hazard: None.
Railroad shipping regulations: None.

Electrum. A natural alloy of gold and silver containing approximately 40 per cent of silver. California and Nevada.

Elemi. See *Gum elemi*.

Elemi Oil.

Color and properties: An almost colorless, liquid oil; agreeable aromatic odor and taste.
Chief known constituents: Limonene and phellandrene.
Constants: Specific gravity 0.870-0.910.
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: Distilled from *Manila*

elemi, an oleoresin of uncertain botanical origin.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Tins; glass bottles.
 Uses: Medicine; perfumes.
 Fire hazard: None.
 Railroad shipping regulations: None.

Eleuthera Bark. See Cascarilla.

Elfwort. See Cascarilla.

Elixir Aromaticum, U. S. P. Aromatic Elixir.

Elixir Glycyrrhizæ, U. S. P. Elixir of glycyrrhiza.

Elixir of Vitrol. See Acid sulfuric, Aromatic.

Elm. See Ulmus.

Eluteria Bark. See Cascarilla.

Embelia.

Color and properties: Dark red to nearly black, warty or striated pieces.
 Derivation: Dried fruit of *Embelia ribes* or *Embelia robusta*.
 Grades: Technical; B. P.
 Containers: Bags.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Embolite. A natural chlorobromide of silver, $\text{Ag}(\text{ClBr})$. Arizona, Colorado and New Mexico.

Emerald Green. See Copper acetoarsenite.

Emery.

Derivation: An impure natural corundum (Al_2O_3). Canada, Massachusetts, New York, Virginia, Europe and Asia Minor.
 Grades: According to degree of fineness.
 Containers: Wooden kegs.
 Uses: Abrasive.

Fire hazard: None.
 Railroad shipping regulations: None.

Emetin.*

Derivation: Purified extract of the resinoid from root *Cephaelis ipecacuanha*.
 Color and properties: Yellowish-brown, light lumps.
 Soluble in water.
 Grades: Technical.
 Containers: Boxes.
 Uses: Medicine; dentistry.
 Fire hazard: None.
 Railroad shipping regulations: None.

Emetinæ Hydrochloridum, U. S. P. See Emetine.

Emetine* $\text{C}_{30}\text{H}_{40}\text{N}_2\text{O}_5$.

Color and properties: Whitish, pulverulent mixture of alkaloids; very bitter taste; darkens on exposure to light; poisonous.
 Constants: Melting-point $62^\circ\text{--}65^\circ\text{C}$.
 Soluble in alcohol and ether; slightly soluble in water.
 Derivation: By extraction and crystallization from root of *Cephaelis ipecacuanha*.
 Grades: Technical; U. S. P.
 Containers: Glass bottles.
 Uses: Medicine and dentistry, usually in the form of the hydrochloride.
 Fire hazard: None.
 Railroad shipping regulations: None.

Emplastrum Belladonnæ, U. S. P., B. P. Belladonna plaster.

Emplastrum Cantharidis, U. S. P., B. P. Cantharides plaster.

Emplastrum Capsici, U. S. P. Capsicum plaster.

Emplastrum Elasticum, U. S. P. Rubber plaster.

Emplastrum Plumbi, U. S. P., B. P. Lead plaster.

Emplastrum Resinæ, U. S. P., B. P. Rosin plaster.

Emplastrum Sinapis, U. S. P. Mustard plaster.

Emussum Amygdalæ, U. S. P. Emulsion of almond.

Emulsum Asafœtidæ, U. S. P. Emulsion of asafetida.

Emulsum Olei Morrhuæ, U. S. P. Emulsion of cod liver oil.

Emulsum Olei Terebinthinæ, U. S. P., B. P. Emulsion of oil of turpentine.

Enargite. A natural copper sulfarsenide, Cu_3AsS_4 . Contains 48.4 per cent copper. Colorado, Montana, Nevada, South Carolina, South Dakota, and Utah.

Endlichte. See Vanadinite. New Mexico.

Enzymes. See page 504.

Eosine* $\text{C}_{20}\text{H}_8\text{Br}_4\text{O}_5$.

Color and properties: Red, crystalline powder.

Soluble in alcohol and acetic acid; insoluble in water.

Derivation: By the bromination of fluorescein.

Grades: Technical; pure.

Containers: Barrels; boxes.

Uses: Dyeing silk, cotton and wool; making red writing ink.

Fire hazard: None.

Railroad shipping regulations: None.

Ephedrine* $\text{C}_{10}\text{H}_{15}\text{NO}$.

Color and properties: Colorless crystals.

Constants: Boiling-point 225°C .

Soluble in water, alcohol and ether.

Derivation: By extraction from the leaves of *Ephedra helvetica* and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Epinephrin. See Adrenalin.

Epigaea* (Trailing arbutus, Gravel plant, Ground laurel).

Derivation: Leaves of *Epigaea repens*.

Habitat: U. S. (Florida to Michigan and northwards).

Grades: Technical.

Containers: Bags; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Epsom Salt. See Magnesium sulfate.

Epsomite. A natural, hydrous magnesium sulfate $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$. New Mexico, Tennessee and Wyoming.

Equisetum* (Horsetail, Field horsetail, Bottlerush).

Derivation: Whole plant of *Equisetum arvense* and of *Equisetum hyemale*.

Habitat: Northern Europe, Asia and North America (south to Virginia and California).

Grades: Technical.

Containers: Boxes.

Uses: Medicine; polishing agent for tinware.

Fire hazard: None.

Railroad shipping regulations: None.

Ergot (*Secale cornutum*, Spurred rye).

Derivation: Sclerotium of *Claviceps purpurea*.

Habitat: Europe; cultivated in Spain and Russia.

Grades: Spanish; Russian; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine; ergot oil.

Fire hazard: None.

Railroad shipping regulations: None.

Ergot Oil*

Color and properties: Brown, liquid, fixed oil.

Chief constituents: Cholesterin, triglycerides of olein and palmitin.

Constants: Specific gravity 0.924.

Soluble in alcohol and alkaline solutions; insoluble in water.

Derivation: From the ergot of rye, *Claviceps purpurea*, by extraction with alcohol, and evaporation of the latter.

Method of purification: Distillation.

Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Ergota, U. S. P., B. P. See Ergot.

Ergotinine* $C_{25}H_{40}N_4O_6$.
Color and properties: Yellowish, crystalline alkaloid; poisonous.
Constants: Melting-point 205°C .
Soluble in alcohol and ether; insoluble in water.
Derivation: By extraction of sclerotium of ergot, *Claviceps purpurea* and crystallization.
Method of purification: Recrystallization.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Erigeron* (Fleabane, Horseweed, Scabious).
Derivation: Leaves and tops of *Erigeron canadensis*.
Habitat: Northern and central U. S.
Grades: Technical.
Containers: Boxes.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Erigeron Oil* (Oil of fleabane).
Color and properties: Pale, yellow, limpid liquid; darkening and thickening with age and exposure; peculiar aromatic, persistent odor; aromatic, slightly pungent taste.
Chief known constituents: D-limonene; terpineol; esters.
Constants: Specific gravity 0.850; boiling-point $175^{\circ}\text{--}180^{\circ}\text{C}$; optical rotation: $+45$.
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: Distilled from the fresh, flowering herb of *Erigeron canadense*.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles; copper flasks.

Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Eriodictyon* (*Yerba santa*; Consumptives' weed; Bear's weed; Mountain balm; Gum plant).
Color and properties: Brownish fragments of leaves; slight, aromatic odor.
Derivation: Dried leaves of *Eriodictyon californicum*.
Habitat: California.
Grades: Technical; U. S. P.
Containers: Boxes.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Erubescite. See Bornite.

Erythraea* (European centaury; Bitter herb; Bloodwort).
Derivation: Leaves and tops of *Erythraea centaurium*.
Habitat: Europe and United States.
Grades: Technical.
Containers: Boxes.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Erythrite (Cobalt bloom). A natural hydrous cobalt arsenate, $\text{Co}_3\text{As}_2\text{O}_8 \cdot 8\text{H}_2\text{O}$, of a purple-pink color. Found in the oxidized parts of cobalt and arsenic bearing veins. California, Colorado, Idaho, Nevada, Ontario.

Erythrosine.*
Derivation: A dyestuff prepared by the iodization of fluorescein.
Grades: Dependent on strength of dyestuff.
Containers: Wooden kegs; tin cans.
Uses: Textile and leather dyeing.
Fire hazard: None.
Railroad shipping regulations: None.

Erythroxyton. See Coca.

Eserine. See Physostigmine.

Eserine-Pilocarpine. Physostigmine-pilocarpine.

Esparto. A grass with a tough fibre, cultivated in Spain, and used chiefly for cordage and papermaking.

Essence of Mirbane. See Nitrobenzene.

Essence of Myrbane. See Nitrobenzene.

Essence of Niobe. See Methyl benzoate.

Estragon Oil.

Color and properties: Clear, colorless oil; peculiar odor; aromatic taste.

Chief known constituent: Para-methoxyallylbenzene.

Constants: Specific gravity 0.906 to 0.932; optical rotation: $+5^{\circ} 15'$ to $+8^{\circ} 10'$.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: Distilled from the herb, *Artemisa dracunculus*.

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Flavoring; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ethal. See Cetyl alcohol.

Ethanethiolic Acid. See Acid thioacetic.

Ether* (Sulfuric ether; Anesthesia ether; Ethyl ether; Ethyl oxide; Æther) ($(C_2H_5)_2O$).

Color and properties: Very light, transparent, colorless, volatile, exceedingly inflammable, mobile liquid; pleasant aromatic odor; burning and sweet taste. Note: Have no flames or sparking electrical equipment anywhere that ether is being used. The vapor of ether mixed with air, explodes when ignited.

Constants: Specific gravity 0.71994; melting-point $-116.2^{\circ}C$; boiling-point $34.9^{\circ}C$.

Soluble alcohol chloroform, benzol, benzine and oils; slightly soluble in water.

Derivation: By the action of sulfuric

acid on ethyl alcohol, followed by distillation.

Method of purification: Rectification.

Grades: Technical; U. S. P. (contains about 4%, by weight, of alcohol, containing a little water); B. P.; C. P.

Containers: Iron drums; glass bottles; tin cans.

Uses: Manufacture of smokeless powder; medicine; anesthetic; organic synthesis; solvent; analytical chemistry.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Ether, Acetic. See Ethyl acetate.

Ether, Amyl. See Amyl oxide, page 503.

Ether, Amylic. See Amyl oxide, page 503.

Ether, Amylactic. See Amyl acetate.

Ether, Anesthesia. See Ether.

Ether, Benzoic. See Ethyl benzoate.

Ether, Beta-naphtholmethyl. See Naphtholmethyl ether, Beta-.

Ether, Beta-naphthylmethyl. See Naphthylmethyl ether, Beta-.

Ether, Bromic. See Ethyl bromide.

Ether, Butyric. See Ethyl butyrate.

Ether, Capric. See Ethyl caprate.

Ether, Capronic. See Ethyl caprate.

Ether, Caproic. See Ethyl caproate.

Ether, Capronic. See Ethyl capronate.

Ether, Caprylic. See Ethyl caprylate.

Ether, Carbonic. See Ethyl carbonate.

Ether, Cinnamic. See Ethyl cinnamate.

Ether, Cocoic. See Ethyl cocoinate.

Ether, Cocoinic. See Ethyl cocoinate.

Ether, Cognac. See Ethyl cocoinate.

Ether, Diacetic. See Ethyl acetoacetate.

Ether, Diamyl. See Amyl oxide, page 503.

Ether, Diethylcarbonic. See Ethyl carbonate.

Ether, Ethyl. See Ether.

Ether, Formic. See Ethyl formate.

Ether, Hydriodic. See Ethyl iodide.

Ether, Hydrobromic. See Ethyl bromide.

Ether, Hydrocyanic. See Ethyl cyanide.

Ether, Isobutyric. See Ethyl butyrate, Iso.

Ether, Methenyltriethyl. See Ethyl formate, Ortho-.

Ether, Naphtholmethyl, Beta-. See Naphtholmethyl ether, Beta-.

Ether, Naphthylmethyl, Beta-. See Naphthylmethyl ether, Beta-.

Ether, Nitric. See Ethyl nitrate.

Ether, Nitrous. See Nitrous ether.

Ether, Oenanthic. See Oenanthic ether.

Ether, Ortho-formic. See Ethyl formate, Ortho-.

Ether, Ozonized. An ethereal solution of hydrogen peroxide.

Ether, Petroleum. See Petroleum ether.

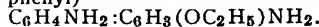
Ether, Pyroacetic. See Acetone.

Ether, Sulfuric. See Ether.

Ethiops Mineral. See Mercuric sulfide, Black.

Ethol. See Cetyl alcohol.

Ethoxybenzidine (Diaminoethoxydiphenyl)



Color and properties: Glistening, flat needles.

Constants: Melting-point 135°C .

Soluble in alcohol; sparingly soluble in water.

Derivation: By heating ethoxybenzidine monosulfonic acid, obtained from benzencazophenetolsulfonic acid, with water in an autoclave.

Method of purification: Crystallization.

Grades: Technical.

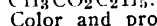
Containers: Wooden kegs.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Acetate* (Acetic ether; Æther aceticus; Vinegar naphtha)



Color and properties: Colorless, fragrant, inflammable liquid.

Constants: Specific gravity 0.9003; melting-point -82.4°C ; boiling-point 77.15°C .

Soluble in chloroform, alcohol and ether; slightly soluble in water.

Derivation: By heating acetic acid and ethyl alcohol in presence of sulfuric acid, and distilling.

Method of purification: Rectification.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums.

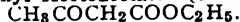
Uses: Medicine; solvent; organic synthesis; flavoring; perfumery.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Ethylacetic Acid. See Acid butyric.

Ethyl Acetoacetate* (Diacetic ether)



Color and properties: Colorless liquid; fruity odor.

Constants: Specific gravity 1.0212; melting-point $-80^{\circ}\text{C}.$; boiling-point $180^{\circ}\text{--}181^{\circ}\text{C}.$

Soluble in alcohol; slightly soluble in water.

Derivation: By the action of metallic sodium on ethyl acetate, with subsequent distillation.

Method of purification: Redistillation. Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; antipyrine.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Alcohol* (Grain alcohol; Fermentation alcohol; Cologne spirit; Spirits of wine) $\text{C}_2\text{H}_5\text{OH}$.

Color and properties: Colorless, limpid, volatile liquid; ethereal, vinous odor; pungent taste.

Constants: Specific gravity 0.78510; melting-point $-112.3^{\circ}\text{C}.$; boiling-point $78.4^{\circ}\text{C}.$

Soluble in water, methyl alcohol and ether.

Derivation: Alcohol is prepared by fermentation of the sugars derived from starch by conversion with diastase, or of molasses, etc. Yeasts (saccharomycetes) decompose them into alcohol and carbon dioxide.

When yeast is added to a solution of cane sugar, hydrolysis into dextrose and levulose first occurs, followed by the immediate decomposition of the dextrose and levulose by the enzyme of the starch into alcohol and carbon dioxide. The alcohol is separated from the water and other products of fermentation by distillation and purified by further fractional distillation. The manufacture of ethyl alcohol from wood waste and from waste liquors of the sulfite pulp process is being carried on commercially on a small scale.

Impurities: Higher alcohols, empyreumatic substances, esters, etc..

Method of purification: Filtration through wood-charcoal or bone-black and repeated distillation.

Grades: Technical; U. S. P. (the phar-

macopœia permits 1 per cent water); B. P.; absolute alcohol (an alcohol which has been dehydrated to 99.8 per cent by distillation with a water-removing substance, such as lime, sodium, etc.); proof spirit (U. S.: a dilute alcohol containing 42.52 per cent of alcohol by weight, or 50 per cent by volume; Gt. Britain: a dilute alcohol containing 49.24 per cent of alcohol by weight or 57.06 per cent by volume); under-proof (U.P.) and overproof spirit (O.P.) spirit are respectively weaker and stronger than proof spirit; denatured alcohol (an alcohol rendered unfit for human consumption by the addition of methyl alcohol, pyridine or other authorized denaturant); rectified spirit (an alcohol containing 95 or more per cent of pure alcohol); Cologne spirit (a very pure distillate containing 95 to 96 per cent of alcohol).

Containers: Barrels; iron drums; tank cars; carboys; tin cans; wooden barrels.

Uses: Organic synthesis; explosives; perfumes; food extracts; medicine; preserving anatomical specimens; solvent; fuel; liquors and liqueurs; preparation of tinctures for pharmaceutical purposes.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Ethylaniline* (Monoethylaniline)

$\text{C}_2\text{H}_5\text{NH C}_6\text{H}_5$.

Color and properties: Colorless liquid, becoming brown on exposure to light.

Constants: Specific gravity 0.9631; melting-point $-80^{\circ}\text{C}.$; boiling-point $206^{\circ}\text{C}.$

Soluble in alcohol; insoluble in water and ether.

Derivation: By heating aniline and ethyl alcohol in presence of sulfuric acid, with subsequent distillation.

Method of purification: Rectification. Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylbenzene* (Ethylbenzol)

Color and properties: Colorless liquid.

Constants: Specific gravity 0.867; melting-point -94°C .; boiling-point 136°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By heating benzol and ethyl chloride in presence of aluminum chloride, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Benzoate* (Benzoic ether)

Color and properties: Colorless, aromatic liquid.

Constants: Specific gravity 1.0509; melting-point -32.7°C .; boiling-point 212.9°C .

Soluble in alcohol and ether; slightly soluble in hot water.

Derivation: By heating ethyl alcohol and benzoic acid in presence of sulfuric acid.

Method of purification: Rectification.

Grades: Technical.

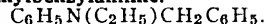
Containers: Iron drums; glass bottles.

Uses: Flavoring extracts; "Peau d'Es-pagne" perfumery; "Essence of Niobe."

Fire hazard: None.

Railroad shipping regulations: None.

Ethylbenzol. See Ethylbenzene.

Ethylbenzylaniline.*

Color and properties: Clear colorless oil.

Constants: Specific gravity 1.034; boiling-point 286°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating monoethyl aniline, benzyl chloride and aqueous caustic soda, with subsequent distillation.

Method of purification: Redistillation.

Grades: Technical.

Containers: Iron drums.

Uses: Dyestuffs; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Bromide* (Monobromoethane,

Hydrobromic ether, Bromic ether)



Color and properties: Colorless, inflammable, volatile liquid.

Constants: Specific gravity 1.4384; melting-point -115.5°C .; boiling-point 38.4°C .

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: Red phosphorus is added to absolute ethyl alcohol, bromine is then slowly added to the mixture which is then distilled.

Method of purification: Rectification.

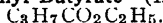
Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Ethyl Butyrate* (Butyric ether)

Color and properties: Colorless volatile liquid; pine-apple-like odor.

Constants: Specific gravity 0.8788; melting-point -93.3°C .; boiling-point 120.6°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: Ethyl alcohol and butyric acid are heated together in presence of sulfuric acid, with subsequent distillation.

Method of purification: Rectification.

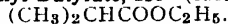
Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Flavoring extracts.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Ethyl Butyrate, Iso* (Isobutyric ether)

Color and properties: Colorless, volatile liquid.

Constants: Specific gravity 0.889; boiling-point $110^\circ\text{--}111^\circ\text{C}$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By heating isobutyric acid and ethyl alcohol, with subsequent distillation.

Method of purification: Redistillation.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; flavoring extracts.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Ethyl Caprate* (Capric ether, Caprinic ether; Ethyl caprinate)

$C_{10}H_{18}COOC_2H_5$.

Color and properties: Colorless liquid; fragrant odor.

Constants: Specific gravity 0.870; boiling-point $243^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating capric acid, absolute alcohol and sulfuric acid, with subsequent distillation.

Method of purification: Redistillation.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; manufacturing wine-bouquet and cognac essence.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Caprinate. See Ethyl caprate.

Ethyl Caproate* (Ethyl capronate; Caproic ether; Capronic ether)

$C_8H_{16}COOC_2H_5$.

Color and properties: Colorless to yellowish liquid; pleasant odor.

Constants: Specific gravity 0.872; boiling-point $167^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating absolute alcohol, normal caproic acid in presence of sulfuric acid, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Capronate. See Ethyl caproate.

Ethyl Caprylate* (Ethyl octoate; Caprylic ether) $CH_3(CH_2)_6COOC_2H_5$.

Color and properties: Colorless liquid; pineapple odor.

Constants: Specific gravity 0.873; melting-point $-48^{\circ}C$; boiling-point $205^{\circ}-206^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating caprylic acid alcohol and sulfuric acid, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Carbamate* (Urethane; Ethylurethane) $CO(NH_2)OC_2H_5$.

Color and properties: Colorless crystals, odorless; salt-peter-like taste.

Constants: Specific gravity 0.9862; melting-point $49^{\circ}C$; boiling-point $180^{\circ}C$.

Soluble in water, alcohol, ether and chloroform.

Derivation: By heating ethyl alcohol and urea.

Method of purification: Crystallization.

Grades: Technical; B. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Carbonate* (Carbonic ether; Diethylcarbonic ether) $(C_2H_5)_2CO_3$.

Color and properties: Colorless, inflammable liquid; pleasant odor.

Constants: Specific gravity 0.978; boiling-point $126^{\circ}C$.

Soluble in alcohol; insoluble in water.

Derivation: By the heating of ethyl iodide and silver carbonate, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Ethyl Chloride* (Monochlorethane; Kelene; Chelene) C_2H_5Cl .

Color and properties: Gas at ordinary temperature; compressed colorless, highly inflammable, volatile liquid.

Constants: Specific gravity 0.9214; melting-point $-140.85^\circ C$; boiling-point $12.5^\circ C$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: (a) By-product in the manufacture of chloral. (b) By passing hydrogen chloride into a solution of zinc chloride and ethyl alcohol.

Method of purification: Distillation.

Grades: Technical; B. P.

Containers: Steel cylinders; small glass tubes.

Uses: Medicine; local anesthetic; dentistry; organic synthesis; refrigeration.

Fire hazard: Dangerous.

Railroad shipping regulations: Red (Gas) label.

Ethyl Chloridum, B. P. See Ethyl chloride.

Ethylcarbonic Acid. See Acid propionic.

Ethyl Cinnamate* (Cinnamic ether)

$C_6H_5C_2H_2CO_2C_2H_5$.

Color and properties: Limpid, oily liquid; strawberry-like odor.

Constants: Specific gravity 1.0546; melting-point $12^\circ C$; boiling-point $271^\circ C$.

Soluble in alcohol and ether; insoluble.

Derivation: By heating ethyl alcohol and cinnamic acid in presence of sulfuric acid.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Extracts.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Cocoinate* (Cocoinic ether; Coic ether; Cognac ether)

$C_{18}H_{25}O_2C_2H_5$.

Color and properties: Yellow, oily liquid; odor of russet apples.

Constants: Specific gravity 0.855.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the action of dry hydrochloric acid gas on an alcoholic solution of the fatty acids of coconut oil.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Flavoring cognac.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Cyanide* (Propionitrile; Propanenitrile; Hydrocyanic ether)

C_2H_5CN .

Color and properties: Mobile, colorless liquid; ethereal odor; poisonous.

Constants: Specific gravity 0.7799; melting-point $-103.5^\circ C$; boiling-point $97.08^\circ C$.

Soluble in alcohol and water.

Derivation: By heating barium-ethyl sulfate and potassium cyanide, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyldimethylaminopentanolbenzoyl

Hydrochloride. See Stovaine, page 509.

Ethyl Formate, Ortho* (Formic ether)

$HCO_2C_2H_5$.

Color and properties: Mobile, colorless liquid; peach-kernel odor.

Constants: Specific gravity 0.9231; melting-point $-80.5^\circ C$; boiling-point $54.05^\circ C$.

Soluble in water, alcohol and ether.

Derivation: By heating ethyl alcohol with formic acid in presence of sulfuric acid.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Flavoring extracts; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Hydroxide. See Ethyl alcohol.

Ethylic. See Ethyl.

Ethyl Iodide* (Monoiodoethane)

Color and properties: Clear, colorless liquid; turns brown on exposure to light.

Constants: Specific gravity 1.9228; melting-point -110.9°C .; boiling-point 72.34°C .

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By digesting red phosphorus with absolute ethyl alcohol, after which iodine is added. The mixture is heated under a reflux condenser and finally distilled.

Grades: Technical; U. S. P.

Containers: Iron drums; amber glass bottles.

Uses: Medicine; organic synthesis.

Fire hazard: None.

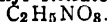
Railroad shipping regulations: None.

Ethylmalonic Acid. See Acid ethylmalonic.

Ethylmethyl Ketone. See Methyl ethyl ketone.

Ethylmorphine Hydrochloride. See Di-onin.

Ethylmustard Oil. See Ethyl thiocarbimide.

Ethyl Nitrate* (Nitric ether)

Color and properties: Colorless, inflammable liquid; pleasant odor; sweet taste.

Constants: Specific gravity 1.116; melting-point 112°C .; boiling-point 87.6°C .

Soluble in alcohol and water; insoluble in water.

Derivation: By heating alcohol, urea nitrate and nitric acid, with subsequent distillation.

Method of purification: Rectification

Grades: Technical.

Containers: Iron drums; glass bottles.

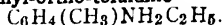
Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Ethyl Nitrite. See Nitrous ether.

Ethyl Octoate. See Ethyl caprylate.

Ethyl-ortho-toluidine*

Color and properties: Colorless oil.

Constants: Specific gravity 0.9534; boiling-point 214°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating ethyl alcohol with ortho-toluidine and hydrochloric acid.

Method of purification: Rectification.

Grades: Technical.

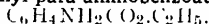
Containers: Iron drums.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Oxide. See Ether.

Ethyl-para-aminobenzoate* (Anesthesin)

Color and properties: White, crystalline, odorless, tasteless powder.

Constants: Melting-point $90^\circ\text{--}91^\circ\text{C}$.

Soluble in alcohol, ether, benzol and fatty oils; very slightly soluble in water.

Derivation: By the ethylation of para-nitrobenzoic acid, followed by reduction.

Method of purification: Recrystallization.

Grades: Technical; pure.

Containers: Glass bottles.

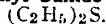
Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylpropionyl. See Diethylketone.

Ethyl Sulfate. See Acid ethyl-sulfuric.

Ethyl Sulfide* (Diethyl sulfide)

Color and properties: Colorless, oily liquid; garlic-like odor.

Constants: Specific gravity 0.837; melting-point -99.5°C .; boiling-point $92^\circ\text{--}93^\circ\text{C}$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By heating potassium-ethyl sulfate and potassium sulfide, with subsequent distillation.

Method of purification: Rectification.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Ethylsulfuric Acid. See Acid ethylsulfuric.

Ethylsulfurous Acid. See Acid ethylsulfurous.

Ethyl Thiocarbimide* (Ethylmustard oil) $C_2H_5N:CS$.

Color and properties: Colorless liquid; pungent odor; inflames the skin.

Constants: Specific gravity 0.9952, boiling-point 131° - $132^{\circ}C$.

Soluble in alcohol; insoluble in water.

Derivation: By the interaction of thiocyanic ether and phosphorus pentachloride, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyl Urethane. See Urethane.

Ethyl Valerianate. See Ethyl Valeriate.

Ethyl Valeriate* $C_5H_9O_2C_2H_5$.

Color and properties: Colorless liquid; pleasant, fruity odor.

Constants: Specific gravity 0.8765; boiling-point $144.5^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By heating valeric acid and ethyl alcohol in presence of sulfuric acid, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Iron drums.

Uses: Essential oils.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylene* C_2H_4 .

Color and properties: Colorless gas.

Constants: Specific gravity 0.5650; melting-point $-169^{\circ}C$; boiling-point $-102.5^{\circ}C$.

Slightly soluble in water, alcohol and ether.

Derivation: (a) By passing alcohol vapors over kaolin or alumina, or aluminum sulfate at 350° - $400^{\circ}C$. (b) By strongly heating a mixture of alcohol and sulfuric or phosphoric acid.

Grades: Technical.

Containers: Steel cylinders.

Uses: Organic preparations; production of mustard gas; oxy-ethylene welding and cutting of metals.

Fire hazard: Dangerous.

Railroad shipping regulations: Red (Gas) label.

Ethylene Alcohol. See Ethylene glycol.

Ethylene Bromide* (Dibromoethane)

CH_2BrCH_2Br .

Color and properties: Colorless, volatile, emulsifiable liquid; chloroform-like odor; poisonous.

Constants: Specific gravity 2.189; boiling-point 129° - $131^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the action of bromine on ethylene gas.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylene Chloride* (Dichloroethane, Dutch liquid; Elayl chloride)

CH_2ClCH_2Cl .

Color and properties: Colorless oily, liquid; chloroform-like odor; sweet taste.

Constants: Specific gravity 1.2823; melting-point $-35.3^{\circ}C$; boiling-point $83.7^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By the action of chlorine on ethylene, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; solvent; manufacture of ethylene glycol; anesthetic.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylene Cyanide* (Succinonitrile) $C_2H_4(CN)_2$.

Color and properties: Colorless, deliquescent crystals.

Constants: Melting-point 51° - 55° C.; boiling-point 158° - 160° C.

Soluble in alcohol, water and chloroform.

Derivation: By the interaction ethylene bromide and potassium cyanide in presence of alcohol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylenediamine* $NH_2CH_2CH_2NH_2$.

Color and properties: Volatile, alkaline liquid; ammonia odor.

Constants: Specific gravity 0.902° C.; boiling-point 117° C.

Soluble in water; insoluble in ether.

Derivation: By heating ethylene chloride and ammonia, with subsequent distillation.

Method of purification: Redistillation.

Grades: Technical.

Containers: Iron drums.

Uses: Solvent for albumin and fibrin.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylenedicarboxylic Acid. See Acid succinic.**Ethylene Glycol*** (Ethylene alcohol; Glycol; Glycohol alcohol)
 $CH_2OH.CH_2OH$.

Color and properties: Clear, colorless, sirupy liquid; sweet taste.

Constants: Specific gravity 1.125; melting-point -12° C.; boiling-point 197.37° C.

Soluble in water, alcohol and ether.

Derivation: (a) By heating ethylene chloride with a solution of an alkali carbonate or bicarbonate under pressure. (b) By heating ethylene chlorohydrine with a solution of an alkali carbonate or bicarbonate. (c) By heating ethylene chloride with sodium formate in methyl alcohol solution.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; glycerine substitute; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyleneimine. See Piperazine.**Ethylene Monochlorochloride*** (Monochloroethylene chloride; Monochlorinated Dutch liquid; Vinyl trichloride; Trichloroethane); $CH_2Cl.CH_2Cl_2$.

Color and properties: Colorless liquid; pleasant odor.

Constants: Specific gravity 1.458; boiling-point 114° .

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By the action of antimony pentachloride on vinyl chloride, with subsequent distillation. (b) By the chlorination of ethylene chloride.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; solvent; anesthetic.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylenenaphthalene. See Acenaphthene.**Ethylenenaphthene.** See Acenaphthene.**Ethylene Periodide.** See Diiodoform.**Ethylene Tetraiodide.** See Diiodoform.**Ethylic.** See Ethyl.**Ethylidenediethyl Ether.** See Acetal.**Ethylidenedimethyl Ether.** See Dimethylacetal.**Ethylidenelactic Acid.** See Acid lactic.**Eucaïne,* Beta-** (Benzoylvinyldiacetone-alkamine) $C_{15}H_{21}NO_2$.

Color and properties: White crystals.

Constants: Melting-point 78° C.

Derivation: By benzoylating vinyl-diacetonealkamine (prepared from diacetoneamine and paraldehyde and reducing the product).

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.
 Railroad shipping regulations: None.

Eucaïne, Beta-, Hydrochloride* (Benzoylvinylacetonealkamine hydrochloride) $C_{15}H_{21}NO_2 \cdot HCl$.

Color and properties: White crystals.

Constants: Melting-point $268^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By the action of hydrochloric acid on beta-eucaïne.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Eucalyptol* (Cineole; Cajeputol)

$C_{10}H_{18}O$.

Color and properties: Colorless oil, camphor-like odor.

Constants: Specific gravity 0.9267; melting-point -1° to $3^{\circ}C$; boiling-point $176^{\circ}C$.

Soluble in ether; slightly soluble in ether.

Derivation: By fractionally distilling eucalyptus oil, followed by freezing.

Method of purification: Rectification or crystallizing by freezing.

Grades: Technical; U. S. P.

Containers: Iron drums.

Uses: Pharmacy.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Eucalyptus* (Gum-wood; Australian fever tree; Blue gum tree).

Derivation: Dried leaves of Eucalyptus globulus.

Habitat: Australia; cultivated in the subtropics, Europe, Northern Africa and Southern and Western United States.

Grades: Technical; U. S. P.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Eucalyptus Oil* (Oleum eucalypti).

Color and properties: Colorless or faintly yellowish liquid oil; characteristic, aromatic, somewhat cam-

phoraceous odor; pungent, spicy and cooling taste.

Chief known constituents: Phellandrene, cineole, citral, pinene, terpenes.

Constants: Specific gravity 0.850-0.940.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: Distilled from the fresh leaves of Eucalyptus globulus, or other species of Eucalyptus.

Method of purification: Rectification.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums; glass bottles.

Uses: Medicine; flotation process of ore concentration; perfumes; soap.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Eucasin (Casein-ammonia).

Color and properties: Fine white powder.

Derivation: By passing ammonia gas over casein.

Soluble in warm water.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Eugenic Acid. See Eugenol.

Eugenol* (Para-oxy-meta-methoxyethylbenzene; Eugenol acid; Caryophyllol acid) $C_9H_8O_2$.

Color and properties: Colorless or yellowish, oily liquid, becomes brown in the air, spicy odor.

Constants: Specific gravity 1.0696; boiling-point $253.5^{\circ}C$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By extraction of clove oil with aqueous potash, liberation with acid and rectification in a stream of carbon dioxide.

Method of purification: Redistillation.

Grades: Technical; U. S. P.

Containers: Iron drums.

Uses: Perfumes; essential oils; medicine; production of isoeugenol for the manufacture of vanillin.

Fire hazard: None.

Railroad shipping regulations: None.

Euonymi Cortex. See Euonymus.

Ethylene Cyanide* (Succinonitrile) $C_2H_4(CN)_2$.

Color and properties: Colorless, deliquescent crystals.

Constants: Melting-point 51° - 55° C.; boiling-point 158° - 160° C.

Soluble in alcohol, water and chloroform.

Derivation: By the interaction ethylene bromide and potassium cyanide in presence of alcohol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylenediamine* $NH_2CH_2CH_2NH_2$.

Color and properties: Volatile, alkaline liquid; ammonia odor.

Constants: Specific gravity 0.902° C.; boiling-point 117° C.

Soluble in water; insoluble in ether.

Derivation: By heating ethylene chloride and ammonia, with subsequent distillation.

Method of purification: Redistillation.

Grades: Technical.

Containers: Iron drums.

Uses: Solvent for albumin and fibrin.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylenedicarboxylic Acid. See Acid succinic.**Ethylene Glycol*** (Ethylene alcohol; Glycol; Glycohol alcohol)
 $CH_2OH.CH_2OH$.

Color and properties: Clear, colorless, sirupy liquid; sweet taste.

Constants: Specific gravity 1.125; melting-point -12° C.; boiling-point 197.37° C.

Soluble in water, alcohol and ether.

Derivation: (a) By heating ethylene chloride with a solution of an alkali carbonate or bicarbonate under pressure. (b) By heating ethylene chlorohydrine with a solution of an alkali carbonate or bicarbonate. (c) By heating ethylene chloride with sodium formate in methyl alcohol solution.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; glycerine substitute; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ethyleneimine. See Piperazine.**Ethylene Monochlorochloride*** (Monochloroethylene chloride; Monochlorinated Dutch liquid; Vinyl trichloride; Trichloroethane); $CH_2Cl.CH_2Cl_2$.

Color and properties: Colorless liquid; pleasant odor.

Constants: Specific gravity 1.458; boiling-point 114° .

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By the action of antimony pentachloride on vinyl chloride, with subsequent distillation. (b) By the chlorination of ethylene chloride.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; solvent; anesthetic.

Fire hazard: None.

Railroad shipping regulations: None.

Ethylenenaphthalene. See Acenaphthene.**Ethylenenaphthene.** See Acenaphthene.**Ethylene Periodide.** See Diiodoform.**Ethylene Tetraiodide.** See Diiodoform.**Ethylic.** See Ethyl.**Ethylidenediethyl Ether.** See Acetal.**Ethylidenedimethyl Ether.** See Dimethylacetal.**Ethylidenelactic Acid.** See Acid lactic.**Eucaïne,* Beta-** (Benzoylvinyldiacetone-alkamine) $C_{15}H_{21}NO_2$.

Color and properties: White crystals.

Constants: Melting-point 78° C.

Derivation: By benzoylating vinyl-diacetonealkamine (prepared from diacetoneamine and paraldehyde and reducing the product).

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

- Extractum Colocynthis**, U. S. P. See Colocynth.
- Extractum Colocynthis Compositum**, U. S. P., B. P. See Colocynth.
- Extractum Ergotae**, U. S. P., B. P. See Ergot.
- Extractum Felis Bovis**, U. S. P. See Gall, Ox.
- Extractum Felsemii**, U. S. P. Extract of Gelsemium.
- Extractum Gentianae**, U. S. P., B. P. See Gentian.
- Extractum Glycerrhizae**, U. S. P., B. P. See Glycyrrhiza.
- Extractum Glycyrrhizae Purum**, U. S. P. See Glycyrrhiza.
- Extractum Hydrastis**, U. S. P., B. P. See Hydrastis.
- Extractum Hyoscyami**, U. S. P., B. P. See Hyoscyamus.
- Extractum Malti**, U. S. P. Extract of Malt.
- Extractum Nucis Vomicae**, U. S. P., B. P. See Nux vomica.
- Extractum Opii**, U. S. P., B. P. Extract of Opium.
- Extractum Physostigmatis**, U. S. P. See Physostigma.
- Extractum Rhei**, U. S. P., B. P. See Rhubarb.
- Extractum Stramonii**, U. S. P. See Stramonium.
- Extractum Sumbul**, U. S. P. See Sumbul.
- Extractum Taraxaci**, U. S. P., B. P. See Taraxacum.
- Extractum Viburni Prunifolii**, U. S. P. See Viburnum prunifolium.

F

- F Acid**. See Acid beta-naphthylamine-monosulfonic 2:7.
- False Saffron**. See Carthamus.
- False Unicorn Root**. See Aletris.
- False Winter's Bark**. See Canella alba.
- Famatinite**. A natural copper-antimony sulfide, $3\text{Cu}_2\text{S} \cdot \text{Sb}_2\text{S}_5$. Contains 43.3 per cent copper. Nevada.
- Fel Bovis**, U. S. P. See Gall, Ox.
- Fel Bovinum Purificatum**, B. P. See Gall, Ox.
- Feldspar**. A general name for a group of abundant rock-forming minerals, the names and compositions of which are as follows: Orthoclase, a monoclinic potassium-aluminum silicate, $\text{K}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$; varieties are known as adularia and sanidine.
Microcline, a triclinic variety of the same composition as orthoclase. **An-**

orthoclase, a triclinic feldspar containing both sodium and potassium. Plagioclase feldspars are a subgroup of triclinic minerals at one end of which is albite, a sodium-aluminum silicate, $\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$; and at the other end anorthite, a calcium-aluminum silicate, $\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$. Mixtures of these two molecules, which may be represented by Ab and An, respectively, form:

Oligoclase, Ab_6An_1 to Ab_3An_1 .

Andesine, Ab_3An_1 to Ab_1An_1 .

Labradorite, Ab_1An_1 to Ab_1An_3 .

Bytownite, Ab_1An_3 to Ab_1An_6 .

Celsian is similar to anorthite, but contains barium in place of calcium, $\text{BaO} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$.

Hyalophane is a monoclinic form containing barium and calcium. Feldspar is found in practically all igneous rocks throughout the United States and Canada. Numerous attempts have been made to utilize the potash in feldspar, none of which as yet are permanently commercially successful.

Felon-grass. See *Imperatoria*.

Felon-wort. See *Imperatoria*.

Fennel* (Large fennel; Sweet fennel).

Derivation: Dried, nearly ripe fruit of *Foeniculum vulgare*.

Habitat: Southern Europe and Western Asia; widely cultivated.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Fennel Oil.*

Color and properties: A colorless or pale yellowish liquid; characteristic aromatic odor; sweetish, mild and spicy taste.

Chief known constituents: Anethol, fenchone, limonene and phellandrene.

Constants: Specific gravity 0.965-0.975; boiling-point $160^\circ\text{--}220^\circ\text{C}$.; refractive index 1.525-1.534.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: Distilled from the fruit of *Foeniculum capillaceum*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; liqueurs; perfumery; soap-making.

Fire hazard: None.

Railroad shipping regulations: None.

Fenugreek (*Foenum graecum*).

Derivation. Seeds of *Trigonella*.

Habitat: Egypt, Asia Minor, France and Germany.

Grades: Technical.

Containers: Bags.

Uses: Medicine; veterinary medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferberite. A natural iron tungstate, FeWO_4 . Name applied to the wolframites which carry little or no manganese. Ferberite contains 76.3 per cent tungsten trioxide, WO_3 . Colorado and South Dakota.

Fergusonite. A natural metacolumbate and tantalate of yttrium, with erbium, cerium, uranium, etc. Found in pegmatites. Texas and Virginia.

Fernambuco. See Lima wood.

Ferri Carbonas Saccharatus, U. S. P., B. P. Saccharated ferrous carbonate.

Ferri Chloridum, U. S. P. See Ferric Chloride.

Ferri et Ammonii Citras, U. S. P., B. P. See Ferric-ammonium citrate.

Ferri et Potassi Tartras, B. P. See Ferric-potassium tartrate.

Ferri et Quininae Citras, U. S. P., B. P. Iron-ammonium citrate.

Ferri Hydroxidum cum Magnesii Oxido, U. S. P. Ferric hydroxide with magnesium oxide.

Ferri Phosphas, U. S. P. See Ferric phosphate.

Ferri Phosphas Saccharatas, B. P. Ferric phosphate, Saccharated.

Ferri Sulphas, U. S. P., B. P. See Ferrous sulfate.

Ferri Sulphas Exsiccatus, U. S. P., B. P. Ferrous sulfate, Dried.

Ferri Sulphas Granulatus, U. S. P. Ferrous sulfate, Granulated.

Ferric Acetate* $\text{Fe}_2(\text{C}_2\text{H}_3\text{O}_2)_6$.

Color and properties. Brownish-red crystalline scales.

Soluble in water and alcohol.

Derivation: By the action of acetic acid on iron, with subsequent crystallization.

Method of purification. Recrystallization.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Textile dyeing; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Acetate, Basic* (Iron acetate, Basic) $\text{Fe}(\text{C}_2\text{H}_3\text{O}_2)_2\text{OH}$.

Color and properties: Red powder.

Soluble in alcohol and acids; insoluble in water.

Derivation: By the action of pyroligneous acid or acetic acid on iron, with subsequent crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Medicine; textile industries.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Albuminate* (Iron albuminate)

Color and properties: Brown, very stable powder.

Soluble in water.

Derivation: By heating ferric hydroxide with a serum-albumin under pressure.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric-Ammonium Citrate* (Iron-ammonium citrate; Ammonioferric citrate).

Color and properties: Reddish-brown, transparent, hygroscopic crystalline scales; saline taste; deliquescent in moist air.

Soluble in water; insoluble in alcohol.

Derivation: By the addition of citric acid to ferric hydroxide, then adding ammonium hydroxide, followed by filtration.

Grades: Technical; U. S. P.; B. P.

Containers: Amber glass bottles.

Uses: Medicine; blueprint photography.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric-Ammonium Oxalate (Iron-ammonium oxalate; Ammonioferric oxalate) $(\text{NH}_4)_3\text{Fe}(\text{C}_2\text{O}_4)_3 \cdot 3\text{H}_2\text{O}$.

Color and properties. Green crystals. Soluble in water.

Derivation: By the interaction of ammonium binoxalate and ferric hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Blueprint photography.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric-Ammonium Sulfate* (Iron-ammonium sulfate; Ammonioferric sulfate) $\text{FeNH}_4(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$.

Color and properties: Lilac to violet, efflorescent crystals.

Soluble in water; insoluble in alcohol.

Derivation: By mixing solutions of ferric sulfate and ammonium sulfate, followed by evaporation and crystallization.

Method of purification: Recrystallization.

Grades: Technical; C. P.

Containers: Wooden kegs.

Uses: Medicine; analytical chemistry; textile dyeing.

Fire hazard: None.
Railroad shipping regulations: None.

Ferric Benzoate* (Iron benzoate)

$\text{Fe}_2(\text{C}_7\text{H}_5\text{O}_2)_6$.
Color and properties: Brown powder.
Soluble in water, alcohol and ether.
Derivation: By the interaction of ferric hydroxide and benzoic acid.
Method of purification: Crystallization.
Grades: Technical.
Containers: Boxes; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Ferric Bichromate* (Iron dichromate;

Ferric dichromate) $\text{Fe}_2(\text{Cr}_2\text{O}_7)_3$.
Color and properties: Reddish-brown granules.
Soluble in water and acids.
Derivation: By heating aqueous chromic acid and moist ferric hydroxide.
Grades: Technical.
Containers: Wooden kegs.
Uses: Preparation of pigments.
Fire hazard: Dangerous.
Railroad shipping regulations: Yellow label.

Ferric Bromide* (Ferric tribromide;

Ferric sesquibromide, Iron bromide) FeBr_3 .
Color and properties: Dark-red, deliquescent crystals.
Constants: Melting-point: Sublimes.
Soluble in water, alcohol and ether.
Derivation: By the action of bromine on iron filings.
Method of purification: Crystallization.
Grades: Technical.
Containers: Boxes; glass bottles.
Uses: Medicine; analytical chemistry; bromine salts.
Fire hazard: None.
Railroad shipping regulations: None.

Ferric Chloride* (Ferric trichloride;

Iron chloride; Iron sesquichloride; Flores martis; Iron perchloride) (a) FeCl_3 ; (b) $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$.

Color and properties: Very deliquescent, orange-yellow crystals.

| | | |
|------------------|-------|------|
| Constants: | (a) | (b) |
| Specific gravity | 2.864 | |
| Melting-point | 301°C | 37°C |

Soluble in water, alcohol and ether.
Derivation: (a) By the action of hydrochloric acid on iron oxides or ferrous carbonate, with subsequent crystallization. (b) By passing chlorine into a solution of ferrous chloride. (c) By oxidizing a solution of ferrous chloride with nitric acid.
Method of purification: Crystallization.

Grades. Technical; U. S. P.; B. P.; sublimed.

Containers: Iron drums.
Uses: Medicine; organic synthesis; reagent in analytic chemistry; chlorinating silver and copper ores; mordant in dyeing; purifying factory effluents.

Fire hazard: None.
Railroad shipping regulations: None.

Ferric Chloride-Antipyrine. See Ferropyrene.

Ferric Chromate* (Iron chromate)

$\text{Fe}_2(\text{CrO}_4)_3$.
Color and properties: Reddish-brown crystals.
Soluble in acids; insoluble in water and alcohol.
Derivation: By adding sodium chromate to a solution of a ferric salt.
Grades: Technical.
Containers: Wooden kegs.
Uses: Metallurgy.
Fire hazard: None.
Railroad shipping regulations: None.

Ferric Citrate* (Iron citrate)

$\text{Fe}_2(\text{C}_6\text{H}_5\text{O}_7) \cdot 2.6\text{H}_2\text{O}$.
Color and properties: Reddish-brown scales. Keep away from light.
Soluble in water and alcohol.
Derivation: By the action of citric acid on ferric hydroxide.
Method of purification: Crystallization.
Grades: Technical.
Containers: Tins; amber glass bottles.

Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Ferric Dichromate. See Ferric bichromate.

Ferric Ferrocyanide* (Prussian blue, Iron ferrocyanide) $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$.
Color and properties: Blue, amorphous powder.

Constants: Melting-point: Decomposes.

Soluble in acids and alkalis; insoluble in water.

Derivation: By the interaction of solutions of a ferric salt and of potassium ferrocyanide. The product is filtered and then dried.

Grades: Technical.

Containers: Wooden barrels.

Uses: Paints; inks; dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Hydrate. See Ferric hydroxide.

Ferric Hydroxide* (Ferric hydrate; Iron hydrate; Ferric sesquioxide, Hydrated; Hydrated iron oxide; Hydrous iron peroxide). $\text{Fe}(\text{OH})_3$.

Color and properties: Brownish powder.

Constants: Specific gravity 3.4-3.9; melting-point: Loses H_2O at 500°C .

Soluble in acids; insoluble in water, alcohol and ether.

Derivation: By the interaction of solutions of a ferric salt and of sodium hydroxide, with subsequent filtration and drying.

Grades: Technical.

Containers: Wooden barrels.

Uses: Manufacturing pigments; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Nitrate* (Iron nitrate).

$\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$.

Color and properties: Gray-white crystals.

Constants: Specific gravity 1.6835; melting-point 47.2°C ; boiling-point: Decomposes.

Soluble in water.

Derivation: By the action of nitric acid on iron filings, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Wooden barrels.

Uses: Textile industries; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Ferric Malate* (Iron malate).

$\text{Fe}_2(\text{C}_4\text{H}_4\text{O}_5)_3$.

Color and properties: Brown, hygroscopic crystals. Keep well stoppered. Soluble in water and alcohol.

Derivation: By the interaction of ferric hydroxide and malic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Amber glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad Shipping regulations: None.

Ferric Oleate* (Iron oleate).

$\text{Fe}(\text{C}_{18}\text{H}_{33}\text{O}_2)_3$.

Color and properties: Brownish-red lumps.

Soluble in alcohol, ether and acids; insoluble in water.

Derivation: By the interaction of solutions of ferrous sulfate and sodium oleate.

Grades: Technical.

Containers: Boxes; kegs.

Uses: Medicine; varnish dryer.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Oxide, Black* (Ferrosferric oxide, Magnetic iron oxide, Iron ethiops) $\text{FeO} \cdot \text{Fe}_2\text{O}_3$.

Color and properties: Reddish-black, amorphous powder.

Soluble in acids; insoluble in water, alcohol and ether.

Derivation: (a) By burning iron in an excess of oxygen.

(b) Occurs in nature as the mineral magnetite.

Grades: Technical.

Containers: Wooden kegs.

Uses: Metallurgy; medicine; pigment; polishing compound.

Fire hazard: None.
Railroad shipping regulations: None.

Ferric Oxide, Brown* (Iron oxide, brown; "Iron subcarbonate"; "Iron carbonate, precipitated") Fe_2O_3 .
Color and properties: Reddish-brown powder, containing ferric carbonate with ferric hydroxide, $\text{Fe}(\text{OH})_3$, and $\text{Fe}(\text{OH})_2$ in varying quantities. Not a true oxide.
Soluble in acids; insoluble in water and alcohol.
Derivation: By the interaction of solution of ferrous sulfate and sodium carbonate.
Grades: Technical.
Containers: Wooden barrels.
Uses: Paint pigment.
Fire hazard: None.
Railroad shipping regulations: None.

Ferric Oxide, Red* (Iron oxide, Red; Iron ore; Indian red; Venetian red; Colcothan; Iron trioxide; Iron sesquioxide; Crocus martis; Rouge; Hematite). Fe_2O_3 .
Color and properties: Dense dark-red powder or lumps.
Constants: Specific gravity 5.12-5.24; melting-point 1548°C .
Soluble in acids; insoluble in water.
Derivation. (a) Found in nature as hematite ore.
(b) By calcining ferrous sulfate or oxalate.
(c) By dehydrating ferric hydroxide.
(d) By-product in some industries.
Grades: Technical—sold on iron oxide content and covering properties.
Containers: Wooden barrels.
Uses: Metallurgy; gas purification; paint pigment; polishing compounds; theatrical rouge; grease paints.
Fire hazard: None.
Railroad shipping regulations: None.

Ferric Oxide, Hydrated. See Ferric hydroxide.

Ferric Oxide, Magnetic. See Ferric oxide, Black.

Ferric Perchloride. See Ferric chloride.

Ferric Peroxide, Hydrous. See Ferric hydroxide.

Ferric Persulfate. See Ferric sulfate, Basic.

Ferric Phosphate* (Iron phosphate).

$\text{Fe}_2(\text{PO}_4)_3 \cdot 4\text{H}_2\text{O}$.
Color and properties: Yellowish-white powder.
Constants: Specific gravity 2.87.
Insoluble in water.
Derivation. By adding a solution of sodium phosphate to a solution of ferric chloride. The product is filtered and then dried.
Grades: Technical; U. S. P.; B. P.
Containers: Wooden barrels.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Ferric-Potassium Sulfate* (Iron-potassium sulfate; Iron alum).

$\text{Fe}_2(\text{SO}_4)_3 \cdot \text{K}_2\text{SO}_4 \cdot 24\text{H}_2\text{O}$.
Color and properties: Pale-violet crystals.
Constants: Specific gravity 1.806.
Soluble in water; insoluble in alcohol.
Derivation: By mixing solutions of potassium sulfate and ferric sulfate and crystallizing.
Method of purification: Recrystallization.
Grades: Technical.
Containers: Wooden barrels.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Ferric Sesquibromide. See Ferric bromide.

Ferric Sesquichloride. See Ferric chloride.

Ferric Sesquioxide. See Ferric oxide, Red.

Ferric Sesquioxide, Hydrated. See Ferric hydroxide.

Ferric Sesquisulfate. See Ferric sulfate.

Ferric-Sodium Oxalate* (Iron-sodium oxalate). $\text{Na}_3\text{Fe}(\text{C}_2\text{O}_4)_3 \cdot 4\frac{1}{2}\text{H}_2\text{O}$.

Color and properties: Emerald-green crystals.

Soluble in water.

Derivation: By the interaction of sodium acid oxalate and ferric hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Photography.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Stearate* (Iron stearate).

$\text{Fe}(\text{C}_{18}\text{H}_{35}\text{O}_2)_3$.

Color and properties: Light-brown powder.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of solutions of ferrous sulfate and sodium stearate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Varnish dryers.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Sulfate* (Iron sulfate; Iron tersulfate; Iron sesquisulfate). (a)

$\text{Fe}_2(\text{SO}_4)_3$; (b) $\text{Fe}_2(\text{SO}_4)_3 \cdot 9\text{H}_2\text{O}$.

Color and properties: Grayish-white powder.

Constants:

Specific gravity

Melting-point

(a)

3.097

Decomposes

(b)

2.21

Decomposes

Soluble in water.

Derivation: By adding sulfuric acid to a solution of ferrous sulfate.

Impurities: Ferrous sulfate; water; sulfuric acid.

Grades: Technical.

Containers: Wooden barrels.

Uses: Pigments; medicine; reagent in analytic chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Sulfate, Basic* (Iron sulfate; Ferric subsulfate; Monsel's salt; Ferric persulfate). $\text{Fe}_4\text{O}(\text{SO}_4)_5$.

Color and properties: Yellow, hygroscopic powder

Derivation: By adding ferrous sulfate to hot dilute sulfuric and nitric acid and boiling until all the nitric acid is driven off and filtering if necessary.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine, in the form of a solution.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Tannate* (Iron tannate).

$\text{Fe}_2(\text{C}_{14}\text{H}_7\text{O}_9)(\text{OH})_3$.

Color and properties: Dark-brown powder.

Soluble in alkalis; insoluble in water, alcohol and ether.

Derivation: By the interaction of ferric acetate and tannic acid solutions.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Tantalate* (Iron tantalate).

$\text{Fe}_2(\text{TaO}_4)_3$.

Color and properties: Grayish-brown powder.

Insoluble in water.

Derivation: By adding sodium tantalate to a solution of a ferric salt.

Grades: Technical.

Containers: Wooden kegs.

Uses: Metallurgy.

Fire hazard: None.

Railroad shipping regulations: None.

Ferric Tersulfate. See Ferric sulfate.

Ferric Tribromide. See Ferric bromide.

Ferric Trichloride. See Ferric chloride.

Ferric Trioxide. See Ferric oxide, Red.

Ferric Tungstate* (Iron tungstate; Iron wolframate). $\text{Fe}_2(\text{WO}_4)_3$.

Color and properties: Brown powder.

Soluble in acids; insoluble in water and alcohol.

Derivation: By adding sodium tungstate to a solution of ferric salt.

Grades: Technical.

Containers: Wooden kegs.
 Uses: Metallurgy.
 Fire hazard: None.
 Railroad shipping regulations: None.

Ferric Vanadate* (Iron vanadate).

FeVO_3 .
 Color and properties: Grayish-brown powder.

Soluble in acids; insoluble in water and alcohol.

Derivation: By adding a solution of a ferric salt to the liquor obtained by leaching vanadium ores with caustic soda solution or by lixiviating the slags obtained when vanadium ores are fused with soda ash, etc.

Grades: Technical.

Containers: Wooden kegs.

Uses: Metallurgy.

Fire hazard: None.

Railroad shipping regulations: None.

Ferripyrine. See Ferropyrine.

Ferro-Carbon-Titanium.* An alloy of iron and titanium containing carbon, sometimes added to steel to make it tougher.

Ferro-Cerium* (Auer metal). Pyrophoric alloys of iron and cerium with other metals of the cerium group ("misch-metall"), used in strike-a-lights, cigar lighters, etc.

Ferro-Chrome. See Ferro-chromium.

Ferro-Chromium* (Often erroneously called "ferro-chrome.") Alloys of iron and chromium containing 25 to 75 per cent of chromium and 2 to 8 per cent of carbon. They are added to steel to produce great hardness.

Ferro-Magnesite.*

Derivation: By dead-burning magnesite mixed with iron ore.

Uses: Refractory linings for steel and copper furnaces.

Ferro-Manganese* (Spiegeleisen). Alloys of iron and manganese, actually manganese carbide with iron, containing 20 to 80 per cent of manganese and

5 to 7 per cent of carbon, produced from ores or iron and manganese in the blast furnace and extensively used in steel-making for the production of manganese steel, non-magnetic steel, and in conjunction with ferro-silicon as a deoxidizing agent, to prevent blowholes.

Ferro-Molybdenum.* Alloys of iron and molybdenum used in steel making for producing hard tool steels and for permanent magnets.

Ferro-Nickel* (Invar). Alloys of iron and nickel containing 25 or more per cent of nickel, used in rheostats and in steel-making for reducing the linear expansion.

Ferro-Phosphorus.* Alloys of iron and phosphorus used in steel-making when very thin castings are to be produced, by increasing the fluidity of the metal.

Ferropyrine* (Ferripyrine; Ferric chloride-antipyrine; Iron chloride-antipyrine) $(\text{C}_{11}\text{H}_{12}\text{N}_2\text{O})_3 \cdot \text{Fe}_2\text{Cl}_6$.
 Color and properties: Red, crystalline powder, containing 64 per cent antipyrine, 12 per cent iron and 24 per cent chlorine.

Constants: Melting-point $220^\circ\text{--}225^\circ\text{C}$.

Soluble in water, alcohol and benzol; insoluble in ether.

Derivation: By mixing ferric chloride and antipyrine solutions and crystallizing.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferro-Silicon.* Alloys of iron and silica containing 30 or more per cent of silicon; but practically no carbon, used in the production of hydrogen and steel-making in conjunction with ferro-manganese as a deoxidizing agent, for converting white cast iron into gray iron.

Ferroso-Ferric Oxide. See Ferric oxide, Black.

Ferrostyp tin $(\text{CH}_2)_6\text{H}_4\cdot\text{HCl}\cdot\text{FeCl}_2$.

Color and properties: Yellow, crystalline powder.

Constants: Melting-point 111°C .

Soluble in water, alcohol, ether and acetone.

Derivation: By the action of formaldehyde on ferric chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferro-Titanium.* Alloys of iron and titanium used in steel-making for removing occluded gases and impurities.

Ferro-Tungsten.* Alloys of iron and tungsten containing 65 to 85 per cent of tungsten and 1 to 2 per cent of carbon, used in steel-making for producing tool steels, magnet steels and "self-hardening" steels.

Ferro-Uranium.* Alloys of iron and uranium containing 35 to 50 per cent of uranium and 1.5 to 4 per cent of carbon, used for making high-speed steels.

Ferro-Vanadium*. Alloys of iron and vanadium containing 25 to 40 per cent of vanadium and 0 to 7 per cent of carbon, used in steel-making for making steels possessing great strength and ability to resist "fatigue," without decreasing their ductility. Also used in breaking cast iron.

Ferrous-Ammonium Sulfate* (Mohr's salt; Iron-ammonium sulfate)
 $\text{Fe}(\text{SO}_4)\cdot(\text{NH}_4)_2\text{SO}_4\cdot 6\text{H}_2\text{O}$.

Color and properties: Light-green crystals.

Constants: Specific gravity 1.865.

Soluble in water and alcohol.

Derivation: By mixing solutions of ferrous sulfate and ammonium sulfate, followed by evaporation and subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; C. P.

Containers: Wooden kegs; glass bottles.

Uses: Medicine; analytical chemistry; metallurgy.

Fire hazard: None.

Railroad shipping regulations: None.

Ferrous Arsenate* (Iron arsenate)

$\text{Fe}_3(\text{AsO}_4)_2\cdot 6\text{H}_2\text{O}$.

Color and properties: Green, amorphous powder.

Insoluble in water.

Derivation: By the interaction of solutions of sodium arsenate and ferrous sulfate.

Grades: Technical.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferrous Bromide* (Iron bromide)

$\text{FeBr}_2\cdot 6\text{H}_2\text{O}$.

Color and properties: Reddish, crystalline powder. Keep well stoppered.

Constants: Specific gravity 4.636; melting-point 27°C .

Soluble in water and alcohol.

Derivation: By the action of bromine on iron filings.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferrous Carbonate* (Iron carbonate; Iron protocarbonate)

(a) FeCO_3 ; (b) $\text{FeCO}_3\cdot \text{H}_2\text{O}$.

Color and properties: Greenish-brown crystals.

Constants: Specific gravity 3.70-3.87; melting-point 470°C ; boiling-point:

Decomposes at 880°C .

Soluble in acids; insoluble in water.

Derivation: (a) Found as such in nature (siderite).

(b) By precipitation of a solution of a ferrous salt with sodium carbonate, yielding a slightly hydrolyzed salt.

Grades: Technical.

Containers: Wooden barrels.

Uses: Iron salts.
Fire hazard: None.
Railroad shipping regulations: None.

Ferrous Chloride* (Iron chloride; Iron dichloride; Iron protochloride)
(a) FeCl_2 ; (b) $\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$.

Color and properties: Greenish-white crystals.

Constants: Specific gravity (a) 2.988; (b) 1.93.

Soluble in alcohol and water.

Derivation: By the action of hydrochloric acid on an excess of iron, with subsequent crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Mordant in dyeing; metallurgy.

Fire hazard: None.

Railroad shipping regulations: None

Ferrous Fluoride* (Iron fluoride)
 $\text{FeF}_2 \cdot 8\text{H}_2\text{O}$.

Color and properties: White powder.

Constants: Specific gravity 4.00.

Soluble in acids; slightly soluble in water; insoluble in alcohol and ether.

Derivation: By the action of fluorine on iron filings.

Grades: Technical.

Containers: Boxes.

Uses: Ceramics; manufacturing alkaline fluorides.

Fire hazard: None.

Railroad shipping regulations: None.

Ferrous Iodide* (Iron iodide; Ferrous protoiodide) $\text{FeI}_2 \cdot 4\text{H}_2\text{O}$.

Color and properties: Crystalline, grayish-black masses.

Constants: Specific gravity 2.873; melting-point 177°C .

Soluble in water and alcohol.

Derivation: By the action of iodine on iron filings.

Grades: Technical.

Containers: Wooden barrels.

Uses: Manufacture of alkali metal iodides.

Fire hazard: None.

Railroad shipping regulations: None.

Ferrous Oxalate* (Iron oxalate)
 $\text{FeC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$.

Color and properties: Pale-yellow, odorless, crystalline powder.

Soluble in acids; insoluble in water.

Derivation: By the interaction of solutions of ferrous sulfate and sodium oxalate.

Grades: Technical.

Containers: Wooden kegs; boxes.

Uses: Medicine; photographic developer.

Fire hazard: None.

Railroad shipping regulations: None.

Ferrous-Potassium Tartrate* (Iron-potassium tartrate).

Color and properties: Green powder or black, lustrous scales.

Soluble in water and acids; insoluble in alcohol.

Derivation: By mixing the solutions of ferrous tartrate and potassium bitartrate, with subsequent crystallization.

Grades: Technical; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferrous Protiodide. See Ferrous iodide.

Ferrous Protochloride. See Ferrous chloride.

Ferrous Protoiodide. See Ferrous iodide.

Ferrous Protosulfide. See Ferrous sulfide.

Ferrous-Quinine Citrate* (Ferri et quinine citras; Iron-quinine citrate)

Color and properties: Greenish-yellow, thin scales; somewhat deliquescent in air.

Slightly soluble in water.

Derivation: By adding quinine to a solution of ferric citrate.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ferrous Sulfate* (Iron sulfate; Copperas; Green vitriol) $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$.

Color and properties: Greenish crystals,

often musty in color from oxidation and efflorescence.

Constants: Specific gravity 1.8987; melting-point 64°C.

Soluble in water, insoluble in alcohol.

Derivation: (a) A by-product from the pickling of steel.

(b) By the action of dilute sulfuric acid on iron and with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; sugar sulfate (anhydrous); U. S. P.; B. P.

Containers: Wooden barrels.

Uses: Water purification; writing inks; pigments; medicine; Prussian blue; textile industry; leather industry; photography; iron salts; deodorizer; disinfectant; reagent in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None

Ferrous Sulfide* (Iron sulfide; Iron protosulfide; Iron sulfuret) FeS .

Color and properties: Dark-brown or black metallic pieces, sticks or granules.

Constants: Specific gravity 4.75-5.40; melting-point 1179°C.

Soluble in acids; insoluble in water.

Derivation: By fusing iron and sulfur.

Impurities: Arsenic.

Grades: Technical.

Containers: Wooden barrels.

Uses: The manufactured sulfide is used for generating hydrogen sulfide; the natural pyrites is used in the manufacture of sulfuric acid, liquid sulfur dioxide and in the sulfite process for making wood pulp.

Fire hazard: None.

Railroad shipping regulations: None.

See also Pyrites.

Ferrum, U. S. P., B. P. See Ferrum reductum.

Ferrum Reductum* (Reduced iron).

Color and properties: Gray, amorphous, fine granular powder.

Derivation: By reducing ferric oxide, heated to a dull redness, in a stream of dry hydrogen.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Fibrin, Muscle. See Syntonin.

Field Horsetail. See Equisetum.

Fig.*

Derivation: The partially dried fruit of *Ficus carica*.

Habitat: Western Asia; cultivated in subtropics, Italy, France and California.

Grades: Technical; U. S. P.

Containers: Boxes.

Uses: Medicine; food; confectionery.

Fire hazard: None.

Railroad shipping regulations: None.

Filix Mas, B. P. See *Aspidium*.

Filt-Char.* Proprietary name of a brand of bone charcoal used as a filtering, decolorizing and deodorizing medium.

"Filter-Cell."* Proprietary name of a brand of infusorial earth used as a filtering medium.

Fire Clay. See Clay, Fire.

Fir-wood Oil. See Pine oil.

Fish Oil. See Black-fish, halibut, herring, menhaden, salmon, sardine and tuna oils.

Flag, Sweet. See Calamus.

Flagstone. A rock which may be cleft into large slabs suitable for sidewalks. See Bluestone. Alabama, Connecticut, Illinois, Indiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, Virginia and Wyoming.

Flake Lead. See Lead carbonate.

Flax-seed. See Linseed.

Flax-seed Oil. See Linseed oil.

Fleabane. See Erigeron.

Fleabane Oil. See Erigeron oil.

Flea-seed. See Psyllum, page 507.

Flea-wort. See Psyllium, page 507.

Flint. A rather loose term, used in United States for a dense fine-grained form of silica which is very tough and breaks with a conchoidal fracture and cutting edges. Of various colors, white, yellow, gray and black. Canada, Maryland, Nebraska and Wisconsin. True flint is not found in the western hemisphere.

Florence Oil. See Olive oil.

Flores Martis. See Ferric chloride.

Flower of Paradise. See Henna.

Flowers of Sulfur. See Sulfur.

Flowers of Tin. See Stannic anhydride.

Flowers of Zinc. See Zinc oxide.

Flowery Head Spurge. See Euphorbia pilulifera.

Fluidextracta, U. S. P. Fluid extracts of drugs.

Fluidextractum Aconiti, U. S. P. Fluid extract of aconite.

Fluidextractum Aromaticum, U. S. P. Aromatic fluid extract.

Fluidextractum Aspidospermatis, U. S. P. Fluid extract of aspidosperma.

Fluidextractum Aurantii Amari, U. S. P. Fluid extract of bitter orange peel.

Fluidextractum Belladonnæ Radicis, U. S. P. Fluid extract of belladonna root.

Fluidextractum Buchu, U. S. P. Fluid extract of buchu.

Fluidextractum Cannabis, U. S. P. Fluid extract of cannabis.

Fluidextractum Cascaræ Sagradæ, U. S. P. Fluid extract of cascara sagrada.

Fluidextractum Cascaræ Sagradæ Aromaticum, U. S. P. Aromatic fluid extract of cascara sagrada.

Fluidextractum Cimicifugæ, U. S. P. Fluid extract of cimicifuga.

Fluidextractum Cinchonæ, U. S. P. Fluid extract of cinchona bark.

Fluidextractum Colchici Seminis, U. S. P. Fluid extract of colchicum seed.

Fluidextractum Digitalis, U. S. P. Fluid extract of digitalis.

Fluidextractum Ergotæ, U. S. P. Fluid extract of ergot.

Fluidextractum Eriodictyi, U. S. P. Fluid extract of eriodictyon.

Fluidextractum Eucalypti, U. S. P. Fluid extract of eucalyptus.

Fluidextractum Frangulæ, U. S. P. Fluid extract of frangula.

Fluidextractum Gelsemii, U. S. P. Fluid extract of gelsemium.

Fluidextractum Gentianæ, U. S. P. Fluid extract of gentian.

Fluidextractum Glycyrrhizæ, U. S. P. Fluid extract of glycyrrhiza.

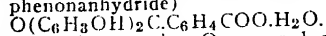
- Fluidextractum Granati, U. S. P.** Fluid extract of pomegranate.
- Fluidextractum Grindeliæ, U. S. P.** Fluid extract of grindelia.
- Fluidextractum Guaranæ, U. S. P.** Fluid extract of guarana.
- Fluidextractum Hydrastis, U. S. P.** Fluid extract of hydrastis.
- Fluidextractum Hyoscyami, U. S. P.** Fluid extract of hyoscyamus.
- Fluidextractum Ipecacuanhæ, U. S. P.** Fluid extract of ipecac.
- Fluidextractum Lobeliæ, U. S. P.** Fluid extract of lobelia.
- Fluidextractum Nucis Vomice, U. S. P.** Fluid extract of nux vomica.
- Fluidextractum Pilocarpi, U. S. P.** Fluid extract of pilocarpus.
- Fluidextractum Podophylli, U. S. P.** Fluid extract of podophyllum.
- Fluidextractum Rhei, U. S. P.** Fluid extract of rhubarb.
- Fluidextractum Rosæ, U. S. P.** Fluid extract of rose.
- Fluidextractum Sabal, U. S. P.** Fluid extract of sabal.
- Fluidextractum Sarsaparillæ, U. S. P.** Fluid extract of sarsaparilla.
- Fluidextractum Sarsaparillæ Compositum, U. S. P.** Compound fluid extract of sarsaparilla.
- Fluidextractum Scillæ, U. S. P.** Fluid extract of squill.
- Fluidextractum Senegæ, U. S. P.** Fluid extract of senega.
- Fluidextractum Sennæ, U. S. P.** Fluid extract of senna.
- Fluidextractum Spigellæ, U. S. P.** Fluid extract of spigelia.
- Fluidextractum Staphisagriæ, U. S. P.** Fluid extract of staphisagria.
- Fluidextractum Stillingiæ, U. S. P.** Fluid extract of stillingia.
- Fluidextractum Sumbul, U. S. P.** Fluid extract of sumbul.
- Fluidextractum Taraxaci, U. S. P.** Fluid extract of taraxacum.
- Fluidextractum Tritici, U. S. P.** Fluid extract of triticum.
- Fluid extractum Uvæ Ursi, U. S. P.** Fluid extract of uva ursi.
- Fluidextractum Veratri Viridis, U. S. P.** Fluid extract of veratrum viride.
- Fluidextractum Viburni Prunifolii, U. S. P.** Fluid extract of viburnum prunifolium.
- Fluidextractum Zanthoxyli, U. S. P.** Fluid extract of zanthoxylum.
- Fluidextractum Zingiberis, U. S. P.** Fluid extract of ginger.
- Fluorene*** (Alpha-diphenylenemethane), $C_{14}H_{10}$.
 Color and properties: Small, white, crystalline plates; fluorescent when impure.
 Constants: Melting-point $116^{\circ}\text{C}.$; boiling-point $295^{\circ}\text{C}.$
 Soluble in alcohol, ether, benzol and carbon bisulfide; insoluble in water.
 Derivation: By reduction of diphenylene ketone with zinc.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Fluorescein* (Resorcinolphthalein; Di-resorcinolphthalein; Tetraoxypthalophenonanhydride)



Color and properties: Orange-red, crystalline powder; very dilute alkaline solutions exhibit a very intense, greenish-yellow fluorescence by reflected light, while the solution is reddish-orange by transmitted light.

Constants: Melting-point: Decomposes at 200°C .

Soluble in dilute alkalis, boiling alcohol, ether and dilute acids.

Derivation: By heating phthalic anhydride and resorcinol.

Grades: Technical.

Containers: Wooden kegs.

Uses: Preparation of dyestuff; dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Fluorescein-Sodium. See Uranine.

Fluorhydric Acid. See Acid hydrofluoric.

Fluorine* F_2 .

Color and properties: Colorless gas; corrosive; poisonous!

Constants: Specific gravity 1.14 (Air=1); melting-point -223°C ; boiling-point -187°C .

Insoluble in water.

Derivation: By electrical decomposition of anhydrous hydrofluoric acid at -23°C .

Containers: Made where and as used, a no practical container has been devised.

Uses: Organic synthesis; fluorine compounds.

Fire hazard: None.

Railroad shipping regulations: Green label.

Fluorite. See Fluorspar.

Fluorol. See Sodium fluoride.

Florspar (Fluorite). A natural calcium

fluoride, CaF_2 . Color commonly purple, green or white. Arizona, California, Canada, Colorado, Connecticut, Illinois, Kentucky, Maryland, Massachusetts, Missouri, New Hampshire, New Jersey, New Mexico, New York, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, Washington and West Virginia.

Flux, Black.*

Derivation: Potassium carbonate or sodium carbonate, sodium nitrate and carbon.

Containers: Tin cans.

Uses: Assaying.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Flux, White.*

Sodium carbonate, sodium nitrate and sodium nitrite.

Color and properties: White powder; strong oxidizer.

Containers: Tin cans.

Uses: Metallurgy; welding.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Feniculum, U. S. P. See Fennel.

Feniculi Fructus, B. P. See Fennel.

Fœnum Græcum. See Fenugreek.

Fool's Gold. See Iron pyrites.

Formal. See Methylal.

Formaldehyde* (Oxymethylene; Formalin; Formalith; Formic aldehyde) $\text{H}\cdot\text{CO}\cdot\text{H}$.

Color and properties: Clear, colorless liquid; suffocating pungent odor; poisonous. An aqueous solution of formaldehyde gas.

Constants: Specific gravity 1.075-1.081; boiling-point: (gas) -21°C .

Miscible with water and alcohol.

Derivation: By passing the vapors of methyl alcohol through a heated copper tube and subsequent absorption in water.

Grades: U. S. P.; B. P.; in the U. S. all formaldehyde is sold on the basis of the U. S. P. specification of a minimum of 37 per cent. absolute CH_2O by weight, 40 per cent by volume. Actually the content varies from 40 to 42 per cent by volume.

Containers: Wood barrels; carboys.

Uses: Organic synthesis, dyestuffs; phenol and cresol synthetic resins and lacquers; rubber goods; inks; leather tanning; photography; disinfecting; preservative for adhesives, anatomical specimens, etc.; hexmethylenetetramine.

Fire hazard: None.

Railroad shipping regulations: None.

Formaldehydeacetamide. See Formicin.

Formaldehyde-Gelatin. Glutol.

Formaldehyde, Para-. See Trioxymethylene.

Formaldehyde, Polymerized. See Trioxymethylene.

Formalin. See Formaldehyde.

Formalith. See Formaldehyde.

Formamidated Chloral. See Chloral formamide.

Formamide* (Methanamine)

$\text{H}_2\text{CO.NH}_2$.

Color and properties: Clear, colorless, oily liquid.

Constants: Specific gravity 1.146; boiling-point $200^\circ\text{--}212^\circ\text{C}$., with partial decomposition.

Soluble in water and alcohol.

Derivation: By the interaction of ethyl formate and ammonia, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Forman* (Chloromethylmenthyl ether)

$\text{C}_{10}\text{H}_{19}\text{OCH}_2\text{Cl}$.

Color and properties: Colorless, oily liquid; fumes slightly in the air.

Soluble in alcohol.

Derivation: By the interaction of formaldehyde and menthol in presence of hydrochloric acid gas, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Formanilide* (Phenylformamide)

$\text{C}_6\text{H}_5\text{NH.CHO}$.

Color and properties: Colorless to yellowish crystals.

Constants: Melting-point 46°C .

Soluble in alcohol and water.

Derivation: By the reaction of aniline and formic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Formic Acid. See Acid formic.

Formic Aldehyde. See Formaldehyde.

Formic Ether. See Ethyl formate.

Formicin (Formaldehydeacetamide)

$\text{CH}_3\text{CO.NHCH}_2\text{OH}$.

Color and properties: Colorless, sirupy liquid.

Constants: Specific gravity 1.25.

Soluble in water, alcohol and chloroform; insoluble in water.

Derivation: By the interaction of acetamide and formaldehyde, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Disinfectant.

Fire hazard: None.

Railroad shipping regulations: None.

Formin. See Hexamethylenetetramine.

- Formol.** See Formaldehyde.
- Formonitrile.** See Acid hydrocyanic.
- Formopyrine*** (Methylenediantipyrine)
 $(C_{11}H_{11}N_2O)_2CH_2$.
 Color and properties: Colorless crystals.
 Constants: Melting-point 176° - 177° C.
 Soluble in alcohol; insoluble in water.
 Derivation: By the interaction of formaldehyde and antipyrine.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Antiseptic.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Formosa Camphor.** See Camphor.
- Formyl Tribromide.** See Bromoform.
- Formyl Trichloride.** See Chloroform.
- Formyl Triiodide.** See Iodoform.
- Fossil Flour.** See Kieselgur.
- Fossil Resin.** Amber.
- Fossil Wax.** See Ozokerite.
- Franciscea.** See Manaca.
- Frangula** (Buckthorn; Alder buckthorn; Black dogwood; Berry alder; Arrow wood; Persian berries).
 Derivation: Dried bark of *Rhamnus frangula*; collected at least one year before use.
 Habitat: Europe, Siberia and Mediterranean coast of Africa.
 Grades: Technical; U. S. P.
 Containers: Bags.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Frankincense.** See Gum thus.
- Franklinite.** A natural iron-manganese-zinc oxide. $(Fe,Zn,Mn)O \cdot (Fe,Mn)_2O_3$. New Jersey.
- Fraude's Reagent.** See Acid perchloric.
- Fraxinus Excelsior** (European ash).
 Derivation: Bark and herb of *Fraxinus excelsior*.
 Chief constituents: Pavin, tannin.
 Habitat: Europe.
 Grades: Technical.
 Containers: 7 lbs.
 Uses: Dyeing; medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Freibergite.** A variety of tetrahedrite rich in silver.
 See Tetrahedrite. Idaho, Nevada.
- Freieslebenite.** A natural lead-silver sulfantimonide, approximately $5(Pb,Ag)_2S \cdot 2Sb_2S_3$. Contains 24.5 per cent silver. Arizona and Colorado.
- French Chalk.** See Talc.
- French Saffron.** See Crocus.
- Fructose*** (Fruit sugar; Levulose)
 $C_6H_{12}O_6$.
 Color and properties: Yellowish, white crystals.
 Constants: Specific gravity 1.555; melting-point 95° C.
 Soluble in water, alcohol and ether.
 Derivation: (a) Found together with glucose in sweet fruits and in large quantities in honey. (b) By the hydrolysis of inulin.
 Grades: Technical.
 Containers: Wooden barrels; tins.
 Uses: Foodstuffs; medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Fruit Sugar.** See Fructose.
- Fuchsiacine.** See Fuchsine.
- Fuchsine*** (Magenta, Roseine, Fuchsiacine, Harmaline, Aniline red). A

synthetic, roseaniline dyestuff. Used in the coloring of silk, wool, cotton and leather a bluish red.

Grades: Technical, based on the strength.

Containers: Wooden kegs; tin boxes.

Uses: Textile and leather industries.

Fire hazard: None.

Railroad shipping regulations: None.

Fuller's Earth.*

Derivation: An imperfectly understood clay relatively high in magnesia. It may or may not be plastic. Arkansas, Colorado, Florida, Georgia, Massachusetts and South Carolina, South Dakota and Texas.

Grades: Technical.

Containers: Bags; barrels.

Uses: Decolorizing agent; filtering medium.

Fire hazard: None.

Railroad shipping regulations: None.

Furfural* (Furfuraldehyde; Furo; Furfuro; Artificial oil of ants; Pyromucic aldehyde; Furfuranecarboxylic aldehyde) $(\text{CH})_4\text{OC}(\text{COH})$.

Color and properties: Colorless, aromatic liquid; turns reddish-brown on exposure.

Constants: Specific gravity 1.1594; boiling-point 162°C .

Soluble in water, alcohol and ether.

Derivation: By distilling bran or carbohydrates with dilute sulfuric acid.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Furfuraldehyde. See Furfural.

Furfuranecarboxylic Aldehyde. See Furfural.

Furfuro. See Furfural.

Furo. See Furfural.

Fusel Oil. See Amyl alcohol, Fermentation.

Fustic, Old. See *Morus tinctoria*.

Fustic Wood (Cuba wood).

Derivation: The heart-wood of *Chlorophora tinctoria* or *Manchura tinctoria*.

Habitat: West Indies and South America.

Uses: Textile dyeing; leather industry.

Containers: Burlap bags.

Fire hazard: None.

Railroad shipping regulations: None.

G

G Acid. See Acid aminonaphtholsulfonic 2:8:6.

G Salt. The sodium salt of Acid aminonaphtholsulfonic 2:8:6.

G R Acid. Acid naphtholdisulfonic, Alpha-.

G R Salt. The sodium salt of Acid naphtholdisulfonic, Alpha-.

Gabbro. A finely to coarsely crystalline igneous rock composed mainly of lime-soda feldspar (labradorite or anorthite),

pyroxene, and frequently olivine. Magnetite or ilmenite, or both, and apatite are accessory minerals. It is generally dark colored. California, Canada, Maryland, South Dakota and Virginia.

Gabian Oil. A very inflammable, mineral naphtha.

Gadolinite. A natural complex silicate of glaucinum, iron and the yttrium and cerium rare-earth metals. Occurs in pegmatites. Arizona, Colorado and Texas.

Gahnite. A natural zinc aluminate, $Zn(AlO_2)_2$.

Galactose* $C_6H_{12}O_6$.

Color and properties: Colorless, crystalline tablets.

Constants: Melting-point 170° - 171° C.

Soluble in water; slightly soluble in alcohol.

Derivation: By oxidation of dulcitol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Boxes; glass bottles.

Uses: Organic synthesis; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Galangae (Galangal; Colic root; East India root; Chinese ginger).

Derivation: Rhizome of *Alpinia officinarum*.

Habitat: China.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Galangal. See Galangae.

Galangal Oil.

Color and properties: A reddish-yellow liquid; aromatic cajuput-like odor; strong camphoraceous taste.

Chief known constituent: Cineol.

Constants: Specific gravity 0.921.

Soluble in alcohol and ether.

Derivation: Distilled from the rhizome of *Alpinia officinarum*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Galbanum.

Derivation: Gum resin obtained from

Ferula galbaniflua.

Habitat: Persia.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Galega (Goat's rue).

Derivation: Whole plant of *Galega officinalis*.

Habitat: Mediterranean region to Central Europe.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Galena. Natural lead sulfide, PbS, in massive formation. Contains 86.6 per cent lead. The principal lead ore of commerce also frequently worked for the silver it carries. Found throughout United States and Canada.

Galenite. The mineral lead sulfide, PbS, which forms the ore galena.

Gall, Hog.*

Color and properties: A yellowish powder; disagreeable, bitter taste.

Soluble in water.

Derivation: Dried purified bile of the hog.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Gall, Ox.*

Color and properties: Yellowish-green, thick extract; unpleasant odor, disagreeable, bitter taste.

Derivation: Thickened bile of the ox.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Galla, U. S. P., B. P. See Gall, Hog, and Gall, Ox.

Gallic Acid. See Acid gallic.

Gallipoli. An impure olive oil used in the textile industries.

Gallotannic Acid. See Acid tannic.

Galls (Nutmalls; Galla; Aleppo galls; Mecca galls; Turkey galls).

Derivation: Excrescences on various

kinds of oak trees. The best grades (55-60 per cent tannic acid) come from Persia, Syria, Turkey and Tripoli. The poorer grades come from Italy, France, Germany and Austria.

Grades: 55-60 per cent tannin; U. S. P. Containers: Wooden barrels; bags.

Uses: Tanning industry; ink manufacture; medicine; textile dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Gambier, U. S. P. See Gambir.

Gambir (Gambier).

Derivation: Extracted from the leaves of an Indian shrub, *Uncaria dacyoneura*.

Grades: 25 per cent Tannin extract; Common; No. 1 Cubes; No. 2 Cubes; U. S. P.

Containers: Extract: Wooden barrels; Cube: Matted bags.

Uses: Textile dyeing; tanning industry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Gamboge. See page 505.

Gamma Acid. See Acid aminonaphthol-sulfonic 2:8:6.

Gamene. See Madder.

Ganister. A highly refractory siliceous sedimentary rock used for metallurgical furnace linings. Pennsylvania.

Garanceaux.

Derivation: A preparation of madder from the exhausted madder, collected from the dye-hecks.

Uses: Dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Garancine. A dye material prepared from fresh madder.

Garantose. See Saccharin.

Garden Lavender. See Lavender, page 505.

Garganine. A madder extract, obtained by use of the sulfuric acid process.

Garlic Oil.

Color and properties: Pale yellowish liquid; characteristic, exceedingly penetrating odor.

Chief known constituents: Allylpropyl bisulfide and diallyl bisulfide.

Constants: Specific gravity 1.053.

Soluble in alcohol, ether and carbon bisulfide.

Derivation: Distilled from the bulb and herb of *Allium sativum*.

Method of purification: Rectification.

Grades: Technical

Containers: Glass bottles.

Uses: Flavoring; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Garnet. A group of silicate minerals including several species with related chemical structure commonly crystallized in dodecahedrons or trapezohedrons. Garnets are not always pure but may be a mixture of two species, giving rise to intermediate types, as the gem rhodolite. Common varieties are:

Almandite, iron-aluminum garnet (abrasive and gem, precious garnet).

Andradite, lime-iron garnet.

Essonite, gem, variety of grossularite.

Grossularite, lime-aluminum garnet.

Pyrope, magnesium-aluminum garnet; gems "Arizona ruby," "Cape ruby," etc.

Rhodolite, isomorphous mixture of 2 molecules of pyrope and 1 molecule of almandite.

Spessartite, manganese-aluminum garnet; used as a gem, sometimes called hyacinth.

Arizona, California, Canada, Colorado, Connecticut, Georgia, Greenland, Idaho, Kentucky, Massachusetts, Montana, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Oregon, Pennsylvania and Virginia.

Garnierite. A natural silicate of nickel and magnesium. New Caledonia and Oregon.

Gas Black. See Lampblack.

Gas Liquor. See Ammonia liquor.

Gas Oil.

Color and properties: Yellow to brown oily liquid; kerosene-like odor.

Constants: Specific gravity 1.3063 to 1.4078; boiling-point 315°-343°C.

Derivation: From petroleum by distillation.

Containers: Iron drums; tank cars.

Uses: Gas manufacture.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

"Gasol."

Color and properties: Yellowish, mobile liquid; gas-like odor.

Derivation: Condensed from casing-head gas by pressure.

Containers: Iron drums; tank cars.

Uses: Fuel-gas manufacture; illumination.

Fire hazard: Dangerous.

Railroad shipping regulations: Red (gas) label.

Gasoline* (Petrol, Motor spirit).

Derivation: (a) By collecting the first distillate of crude petroleum. (b) From the distillation of petroleum, the products ranging in gravity from 50°Be to 90°Be and over, which are extracted from the still gases by the compression method. There are two general grades of gasoline. The normal gasoline which exists naturally in petroleum and the "cracked" gasoline formed by the decomposition of the heavier products. (c) From natural gas, by compression and fractionation.

Grades: 56° to 72°Be.

Containers: Iron drums; tank cars.

Uses: Fuel for internal combustion engines; solvent; cleansing clothing, etc.; paint mixing; rubber cements.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Gaultheria. See page 505.

Gaultheria Oil* (Wintergreen oil).

Color and properties: A colorless, yel-

low or reddish liquid; characteristic, strongly aromatic odor; sweetish, warm and aromatic taste.

Constants: Specific gravity 1.175-1.185; boiling-point 218°-221°C.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: Distilled from the leaves of *Gaultheria procumbens* (Checkerberry, partridge-berry or boxberry).

Method of purification: Rectification.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums; glass bottles.

Uses: Flavoring compounds; medicine; perfumery; confectionery.

Fire hazard: None.

Railroad shipping regulations: None.

Gaultheria Oil, Artificial. See Methyl salicylate.

Gedanite. A resin resembling rosin, not containing succinic acid. Found on the shores of the Baltic.

Gelatin*.

Color and properties: Yellow, translucent sheets or flakes.

Derivation: By extraction with water from certain kinds of bones and parts of the skin of cattle, selected washed and treated with especial care so that the resulting product is cleaner and purer than ordinary glue.

Grades: Technical; U. S. P.; B. P.

Containers: Paper packages; boxes; barrels.

Uses: Foodstuffs; confectionery; clarifying agent; leather finishing compounds; adhesives; medicine; medicinal capsules; containers.

Fire hazard: None.

Railroad shipping regulations: None.

Gelatin, Insoluble. Gelatin treated with formaldehyde, not soluble in water.

Gelatinum, U. S. P., B. P. See Gelatin.

Gelatinum Glycerinatum, U. S. P. Glycerinated gelatin.

Gelsemii Radix, B. P. Gelsemium root.

Gelsemin.

Color and properties: Yellowish-brown powder.

Soluble in alcohol.

Derivation: From the rhizome and root of *Gelsemium sempervirens*.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Gelseminine* $C_{22}H_{26}N_2O_8$.

Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point 172°C .

Soluble in benzol; insoluble in water.

Derivation: By extraction from the root of *Gelsemium*.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Gelseminine Hydrochloride*

$C_{22}H_{26}N_2O_8 \cdot HCl$.

Color and properties: White crystalline powder.

Constants: Melting-point 330°C .

Soluble in water; very slightly soluble in alcohol.

Derivation: By the action of hydrochloric acid on gelseminine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Gelsemium. See page 505

Genthite. A natural hydrous nickel-magnesium silicate, theoretically $2NiO \cdot 2MgO \cdot 3SiO_2 \cdot 6H_2O$, but the nickel content is variable. Georgia and Oregon.

Gentian (*Gentiana*; Yellow gentian; Bitter root).

Derivation: Dried rhizome and roots of *Gentiana lutea*.

Habitat: Central and Southern Europe

Grades: Technical; U. S. P.

Containers: Tins.

Uses: Medicine; liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

Gentiana, U. S. P. See *Gentian*.

Gentianæ, Radix, B. P. See *Gentian*.

Geoform. See *Methylenediguaiacol*.

Geraniol* $C_9H_{16}CH_2OH$.

Color and properties: Pale yellow, liquid oil; pleasant geranium-like odor.

Constants: Specific gravity 0.8812; melting-point -15°C ; boiling-point 230°C . Soluble in alcohol and ether; insoluble in water.

Derivation: From geranium oil, also from citronella and palmarosa oils by forming the double compound with calcium chloride.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Geraniol Acetate*

$C_9H_{14}CH_2OII \cdot C_2H_3O_2$.

Color and properties: Clear, colorless liquid.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the acetylation of geraniol.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Essential oils.

Fire hazard: None.

Railroad shipping regulations: None.

Geranium* (Cranes-bill; Storks-bill; Alum root).

Derivation: Dried rhizome of *Geranium maculatum*.

Habitat. Canada and Eastern United States, south to Georgia.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Geranium, Blood. See *Sanguinaria*.

Geranium Oil, Rose* (Africa, Algeria).

Color and properties: Pale-yellowish or greenish liquid; exceedingly agreeable rose-like odor.

Chief known constituent: Geraniol.

Constants: Specific gravity 0.886-0.898; optical rotation -7° to 12° .

Soluble in alcohol and ether.

Derivation: Distilled from the herb of several species of *Pelargonium*, especially *P. radula*, *P. capitatum* and *P. odoratissimum*.

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks, glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Geranium Oil, Turkish (East Indian).

Color and properties: A nearly colorless or pale-yellowish liquid.

Chief known constituent: Geraniol.

Constants: Specific gravity 0.890 to 0.900.

Soluble in alcohol and ether.

Derivation: Distilled from the grass of a species of *Andropogon*.

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Geratacaca. See Manaca.

German Chamomiles. See Matricaria.

German Sarsaparilla. See Carex.

German Silver* (Victory silver; Pack fong; New silver). An alloy of zinc, nickel and copper.

Germantown Black. See Lampblack.

Gillenia* (American ipecac, Indian physic).

Derivation: Root of *Gillenia trifoliata*.

Habitat: Canada to Florida.

Grades: Technical.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Gilsonite (Uintahite; Uintaite).

Color and properties: A brilliant black, lustrous, very brittle asphalt having

a marked conchoidal fracture; is the purest natural bitumen. On exposure to air it readily breaks down into a brown powder. It is plastic when warmed, decrepitates, but fuses easily in a candleflame.

Constants: Specific gravity 1.065-1.070. Soluble in carbon bisulfide, alcohol and hot turpentine.

Derivation: Obtained from a deposit in Utah.

Grades: Technical.

Containers: Barrels.

Uses: Coach and other varnishes; paving; insulation; waterproofing.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Gingelly Oil. See Sesame oil.

Ginger. See page 505.

Ginger Oil.*

Color and properties: A pale-yellow liquid; characteristic odor; aromatic, somewhat burning taste.

Chief known constituents: Zingiberene, zingiberol, cineole, borneol and phellandrene.

Constants: Specific gravity 0.880-0.885; optical rotation -25° to -45° .

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the rhizome of *Zingiber officinale*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Flavoring; preparation of liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

Ginger-grass Oil.

Color and properties: A pale yellow liquid oil. It is less valuable than Turkish geranium oil, and is often grossly adulterated, especially with fatty oils.

Derivation: Distilled from the grass of a species of *Andropogon*.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Gingily Oil. See Sesame oil.

Ginseng* (Panax; American ginseng).
Derivation: Root of Panax quinquefolium.

Habitat: North America.

Grades: Technical.

Containers: Bags.

Uses: Technical; by the Chinese, medicinally.

Fire hazard: None.

Railroad shipping regulations: None.

Glass, Soluble. See Sodium silicate.

Glass, Volcanic. See Obsidianite.

Glass, Water. See Sodium silicate.

Glass-makers' Soap. See Manganese dioxide.

Glauber's Salt. See Sodium sulfate.

Glauberite. A natural sodium-calcium sulfate, $\text{Na}_2\text{SO}_4 \cdot \text{CaSO}_4$. Arizona, New Mexico.

Glaucanite (Greensand). Essentially a hydrous silicate of iron and potassium, but the material is usually a mixture, and consequently varies much in composition. The potash ranges from 2.2 to 7.9 per cent. See Marl.

Glonoin Oil. See Nitroglycerin.

Glucinum (Beryllium) Gl.

Constants: Specific gravity 1.85; melting-point 1280°C .

Soluble in acids.

Derivation: By electrolysis of the double fluoride of glucinum and potassium.

Grades: Technical.

Containers: Boxes.

Uses: Glucinum salts; copper alloys, used in musical instruments.

Fire hazard: None.

Railroad shipping regulations: None.

Glucinum Nitrate (Beryllium nitrate)

$\text{Gl}(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: White to faintly yellowish, deliquescent mass.

Constants: Melting-point 90°C .

Soluble in water.

Derivation: By the action of nitric acid

on glucinum oxide, with subsequent evaporation and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Chemical reagent.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Glucinum Ore. See Beryl.

Glucinum Oxide (Beryllium oxide) GIO.

Color and properties: White, amorphous powder.

Constants: Specific gravity 3.016.

Soluble in acids and alkalis; insoluble in water.

Derivation: By heating glucinum nitrate.

Grades: Technical.

Containers: Glass bottles.

Uses: Glucinum salts.

Fire hazard: None.

Railroad shipping regulations: None.

Glucose. See Dextrose.

Glucosum, U. S. P., B. P. See Dextrose.

Glue, Animal.*

Derivation: Made from tannery and slaughter-house offal, such as fleshings, pates, ear-laps, sinews, feet and tails of cattle and sheep.

Grades: Technical.

Containers: Wooden barrels.

Uses: Adhesives; finishing textiles; felt-hat manufacture; plastics; sand-paper; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Glue, Cold. See Glue, Liquid.

Glue, Fish.*

Derivation: By boiling the heads, fins and tails of fish. It has weak jellying properties and is generally made into liquid glue. The disagreeable odor is masked with oil of sassafras.

Grades: Technical.

Containers: Barrels; tins.

Uses: Adhesives.

Fire hazard: None.

Railroad shipping regulations: None.

Chief known constituent: Geraniol.

Constants: Specific gravity 0.886-0.898; optical rotation -7° to 12° .

Soluble in alcohol and ether.

Derivation: Distilled from the herb of several species of *Pelargonium*, especially *P. radula*, *P. capitatum* and *P. odoratissimum*.

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks, glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Geranium Oil, Turkish (East Indian).

Color and properties: A nearly colorless or pale-yellowish liquid.

Chief known constituent: Geraniol.

Constants: Specific gravity 0.890 to 0.900.

Soluble in alcohol and ether.

Derivation: Distilled from the grass of a species of *Andropogon*.

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Geratacaca. See Manaca.

German Chamomiles. See Matricaria.

German Sarsaparilla. See Carex.

German Silver* (Victory silver; Pack fong; New silver). An alloy of zinc, nickel and copper.

Germantown Black. See Lampblack.

Gillenia* (American ipecac, Indian physic).

Derivation: Root of *Gillenia trifoliata*.

Habitat: Canada to Florida.

Grades: Technical.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Gilsonite (Uintahite; Uintaite).

Color and properties: A brilliant black, lustrous, very brittle asphalt having

a marked conchoidal fracture; is the purest natural bitumen. On exposure to air it readily breaks down into a brown powder. It is plastic when warmed, decrepitates, but fuses easily in a candleflame.

Constants: Specific gravity 1.065-1.070. Soluble in carbon bisulfide, alcohol and hot turpentine.

Derivation: Obtained from a deposit in Utah.

Grades: Technical.

Containers: Barrels.

Uses: Coach and other varnishes; paving; insulation; waterproofing.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Gingelly Oil. See Sesame oil.

Ginger. See page 505.

Ginger Oil.*

Color and properties: A pale-yellow liquid; characteristic odor; aromatic, somewhat burning taste.

Chief known constituents: Zingiberene, zingiberol, cineole, borneol and phellandrene.

Constants: Specific gravity 0.880-0.885; optical rotation -25° to -45° .

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the rhizome of *Zingiber officinale*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Flavoring; preparation of liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

Ginger-grass Oil.

Color and properties: A pale yellow liquid oil. It is less valuable than Turkish geranium oil, and is often grossly adulterated, especially with fatty oils.

Derivation: Distilled from the grass of a species of *Andropogon*.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Glycerinum Amyli, U. S. P.; B. P. Glyceryl-starch.

Glycerinum Boracis, B. P. Glyceryl borax.

Glycerinum Boroglycerini, U. S. P., B. P. Glyceryl-boroglycerin.

Glycerinum Hydrastis, U. S. P. Glyceryl-hydrastis.

Glycerinum Pepsini, B. P. Glyceryl-pepsin.

Glycerinum Phenolis, U. S. P., B. P. Glyceryl-phenol.

Glycerinum Plumbi Subacetatis, B. P. Glyceryl lead acetate.

Glycerinum Tragacanthae, B. P. Glyceryl-tragacanth.

Glycerocarbohic Acid. See Acid glycerino-carbohic.

Glycerol. See Glycerine.

Glycerophosphoric Acid. See Acid glycerophosphoric.

Glyceryl Stearic Ester. See Stearin.

Glyceryl Trinitrate. See Nitroglycerine.

Glycine. See Acid aminoacetic

Glycocholic Acid. See Acid glycocholic.

Glycocol. See Acid aminoacetic

Glycol. See Ethylene glycol.

Glycol Alcohol. See Ethylene glycol.

Glycolic Acid. See Acid glycolic.

Glycolin. See Petrolatum, Liquid.

Glycollic Acid. See Acid glycolic.

Glycophenol. See Saccharine.

Glycosine. See Saccharine.

Glycyl Alcohol. See Glycerine.

Glycyrrhiza (Licorice; Sweet-root)
Derivation: Dried rhizomes and roots of *Glycyrrhiza glabra* or *glandulifera*.
Habitat. Southern Europe to Central Asia.
Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine; confectionery.
Fire hazard: None.
Railroad shipping regulations: None.

Glycyrrhizae Radix, B. P. See *Glycyrrhiza*.

Glycyrrhizinum Ammoniatum, U. S. P. Ammoniated glycyrrhizin.

Goa Powder, Purified. See Chrysarobin.

Goat's Rue. See Galega.

Gold* (Au).

Color and properties: Yellow, ductile metal.

Constants: Specific gravity 19.2; melting-point 1062°C.; boiling-point 2530°C.

Soluble in aqua regia; insoluble in acids.

Derivation: Generally found native enclosed in quartz with iron pyrite and other minerals, or as gold telluride and recovered by amalgamation with mercury or solution in cyanide (sodium or potassium), followed by precipitation and fusion. See also Amalgam, Calaverite, Electrum, Krennerite, Nagyagite, Petzite, Sylvanite. Gold is found all over the world, but the great producing centers today are Alaska (Klondike), California, South Africa, Colorado, British Columbia, Australasia, Canada, India, China, Russia and Mexico.

Grades: Technical.

Containers: Canvas sacks; wooden boxes.

Uses: Coins; jewelry; gold salts; dentistry; amalgams; gilding; decoration; gold leaf; gold plating.

Fire hazard: None.

Railroad shipping regulations: None.

Gold, Artificial. See Stannic sulfide.

Goldbloom. See Calendula.

Gold Chloride.*

(a) AuCl_3 (b) $\text{AuCl}_3 \cdot 2\text{H}_2\text{O}$.
Color and properties: Yellow crystals.
Soluble in water, alcohol and ether.
Derivation: By decomposing chloroauric acid with heat.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles.
Uses: Photography; gold plating; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Gold, Colloidal. See Collaurin.

Gold-Potassium Chloride* (Potassium aurichloride) $\text{AuCl}_3 \cdot \text{KCl} \cdot 2\text{H}_2\text{O}$.

Color and properties: Yellow crystals.
Soluble in water, alcohol and ether.
Derivation: By neutralizing chloroauric acid with potassium carbonate.
Grades: Technical.
Containers: Glass bottles.
Uses: Photography; painting porcelain and glass; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Gold-Potassium Cyanide* (Potassium cyanurate) $\text{KAu}(\text{CN})_2$.

Color and properties: White, crystalline powder; poisonous.
Soluble in water; slightly soluble in alcohol; insoluble in ether.
Derivation: By the action of hydrocyanic acid on potassium aurate.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine; electroplating.
Fire hazard: None.
Railroad shipping regulations: None.

Gold-Sodium Chloride* $\text{NaAuCl}_4 \cdot 2\text{H}_2\text{O}$.

Color and properties: Yellow crystals.
Soluble in water and alcohol.
Derivation: By neutralizing chlorauric acid with sodium carbonate.
Method of purification: Crystallization.

Containers: Glass bottles.

Grades: Technical.

Uses: Photography; staining glass; decorating porcelain; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Gold Thread. See Coptis.

Gold-Tin Precipitate. See Gold-tin purple.

Gold-Tin Purple (Purple of Cassius; Gold-tin precipitate).

Color and properties: Brown powder.
Soluble in ammonia.

Derivation: By the reaction of a neutral solution of gold chloride with stannous and stannic chlorides, yielding a mixture of gold chloride and tin oxide in varying proportions.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Manufacture of ruby glass; coloring enamels; painting porcelain.

Fire hazard: None.

Railroad shipping regulations: None.

Golden Antimony. See Antimony sulfide.

Golden Seal. See Hydrastis.

Goldenthread. See Coptis.

Goldfeldite. A natural sulfantimonide of copper in which part of the antimony is replaced by arsenic and bismuth and part of the sulfur by tellurium. Nevada.

Gommeline. See Dextrin.

Goose-foot Oil See Chenopodium oil.

Gossypii Radicis Cortex, B. P. See Cotton-root bark.

Gossypium, B. P. Cotton.

Gossypium Bark* (Cotton-root bark).

Derivation: Dried bark of the root of *Gossypium herbaceum* and other cultivated species of *Gossypium*.

Habitat: India, China, Arabia, Egypt, West Indies, Spain, Australia, South America and United States.

Grades: Technical; U. S. P.

Containers: Boxes.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Gossypium Purificatum, U. S. P., D. P.
Purified cotton.

Gossypose. See Raffinose, page 508.

Goulard's Extract. A 25 per cent solution of lead subacetate.

Gourd Oil. See Cucumber oil.

Grahamite. A natural hydrocarbon resembling albertite in its jet-black luster, occurring in veinlike masses. Is soluble in carbon bisulfide and chloroform but not in alcohol, and is fusible. Specific gravity 1.145. Has a conchoidal fracture and is brittle. Colorado, Oklahoma and West Virginia.

Grain Alcohol. See Ethyl alcohol.

Grain Oil. See Amyl alcohol.

Grains of Paradise. See Amonium melegueta.

Graminis. See Triticum, page 510.

Grana Tilli. See Tigllium, page 510.

Granatum* (Pomegranate).
Derivation: Bark of stem and root of *Punica granatum*.
Habitat: Mediterranean region and Eastern, Western and Southern Asia; cultivated in semi tropical countries.
Grades: Technical; U. S. P.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Grape-seed Oil (Grape-stone oil; Wine-stones oil).
Color and properties: Yellow, liquid, fixed oil; unpleasant odor; bitter taste.
Constants: Specific gravity 0.9202-0.9350; solidification-point -10° to -15°C .; saponification value 178-180; iodine number 94-96.5; Maumene number 52-54.

Soluble in benzol, benzine and carbon bisulfide.

Derivation: From the dried, ground seeds of the grape, *Vitis vinifera*, by steeping in water, heating and pressing, or by extraction with a volatile solvent.

Method of purification: Decolorization with bone-black.

Grades: Technical.

Containers: Tins; iron drums.

Uses: Lubricant; fuel; illumination; food; soap-making.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Grape-stone Oil. See Grape-seed oil.

Grape Sugar. See Dextrose.

Graphite* (Black lead, Mineral carbon, Plumbago, Wad).

Color and properties: A soft, steel-gray to black, more or less impure, native form of carbon.

Derivation: The best grades of commercial, natural graphite come from Ceylon, but it is also found in Alabama, Arizona, Austria, Brazil, California, Canada, Colorado, Connecticut, Cumberland, Georgia, Maine, Massachusetts, Michigan, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Pennsylvania, Rhode Island, Siberia, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, Wisconsin and Wyoming.

Graphite is now also made artificially from other forms of carbon in the electric furnace. It also separates out in certain grades of iron.

Uses: Pencil manufacture; anodes for electric cells; arc-light carbons; lubricants; paint pigment; crucibles.

Grades: Powder; flake.

Containers: Wooden kegs; boxes.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Gravel Plant. See Epigaea.

Gravel Root. See Eupatorium purpureum

Gray Antimony. See Stibnite.

Gray Copper Ore. See Tennantite and Tetrahedrite.

Gray Manganese Ore. See Manganite.

Grease. See Acids oleic, palmitic, stearic.

Green, Paris. See Copper acetoarsenite.

Green Hellebore. See Veratrum.

Green Lead Ore. See Pyromorphite.

Green Oil. See Anthracene.

Green Soap. See Soap, Soft.

Green Verdigris. See Copper acetate, Basic.

Green Vitriol. See Ferrous sulfate.

Greenockite. A natural cadmium sulfide, CdS. Contains 77.7 per cent cadmium. Greenockite occurs as a secondary mineral in zinc deposits in various parts of the United States, but not as a commercial deposit at any place. The majority of sphalerite deposits are cadmiferous, and cadmium in commercial quantity is obtained as a by-product in smelting these ores at certain plants. Arkansas, Colorado, Missouri and Pennsylvania.

Greensand. See Glauconite.

Greensand Marl. Sands of marl containing glauconite. See Marl.

Griffiths' White. See Lithopone.

Grindelia* (Gum plant).

Derivation: Dried leaves and flowering tops of *Grindelia robusta* and *Grindelia squamosa*.

Habitat: California.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Grindstone. A tough sandstone of fine and even grain, composed almost entirely of quartz, mostly in angular grains. It must have sufficient cement-

ing material to hold the grains together but not enough to fill the pores and cause the surface to wear smooth. The finest grindstones come from certain localities in New York, Ohio and Great Britain, but usable grindstones are also found in Colorado, Connecticut, Indiana, Massachusetts, Michigan, Missouri, Montana, South Dakota, West Virginia, Wyoming and Canada.

Ground Holly. See Chimaphila.

Ground Laurel. See *Epigaea*.

Ground-Nut. Peanut.

Ground-nut Oil. See Peanut oil.

Guacamphol (Guaiacol camphorate)

$C_8H_{14}(COOC_6H_4OCH_3)_2$.

Color and properties: Colorless, odorless, tasteless, crystalline needles.

Soluble in alcohol, ether and chloroform; insoluble in water.

Derivation: By the interaction of guaiacol and camphoric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Guacetin. See Guaiacetin.

Guaiaci Lignum, B. P. Guaiac wood.

Guaiaci Resina, B. P. See Guaiacum.

Guaiac Wood Oil.*

Color and properties: A very thick and viscid oil, becoming crystalline at ordinary temperatures; very agreeable violet and tea-like odor.

Chief known constituent: Guaiol.

Constants: Specific gravity 0.965-0.975; optical rotation -6° to -7° .

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the wood of an undetermined species of guaiacum

from South America, where it is known as balsam wood.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Guaiacetin* (Guacetin, Sodium pyrocatechin monacetate; Sodium phenoneacetate)

$C_6H_4(OH)OCH_2COONa$.

Color and properties: White powder.

Soluble in water.

Derivation: By the action of sodium carbonate on phenoneacetate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Guaiacol* (Monomethylcatechol; Pyrocatechin monomethylester; Protocatechin methylester) $OHC_6H_4OCH_3$.

Color and properties: Faintly yellowish, limpid, oily liquid; characteristic aromatic odor.

Constants: Specific gravity 1.1395; melting-point $27.9^\circ C$; boiling-point $205^\circ C$.

Soluble in water, alcohol and ether.

Derivation: By shaking beechwood creosote with ammonia, treating with alcoholic potash, washing with ether, crystallizing the potash compound from alcohol and decomposing it with dilute sulfuric acid.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Guaiacol Camphorate. See Guacamphol

Guaiacol Carbonas, B. P. See Guaiacol carbonate.

Guaiacol Carbonate* (Neutral guaiacol

carbonate, Duotal, *Guaiacol ester of carbonic acid*) $(C_6H_4OCH_3)_2CO_2$.

Color and properties: White, crystalline powder.

Constants: Melting-point $84^\circ-87^\circ C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the action of carbonyl chloride on sodium guaiacolate.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Guaiacol Salicylate. See Guaiacol-salol.

Guaiacol-Salol* (Guaiacol salicylate)

$C_6H_4OCH_3C_7H_5O_2$.

Color and properties: White crystals.

Constants: Melting-point $65^\circ C$.

Soluble in alcohol; insoluble in water.

Derivation: By the interaction of guaiacol and salicylic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Guaiacolis Carbonas, U. S. P. See Guaiacol carbonate.

Guaiacum. (Gum guaiac, Resin guaiac).

Derivation: A resin from certain West Indian trees, especially *Guaiacum sanctum* and *G. officinale*.

Soluble in alcohol, ether, acetone, chloroform and caustic soda.

Grades: Technical; U. S. P.; B. P.

Containers: Kegs.

Uses: Medicine; varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

Guaiacyl* (Calcium guaiacolmonosulfonate) $Ca(C_6H_3OH.OCH_3SO_3)_2$.

Color and properties: Bluish-gray powder.

Soluble in alcohol and water.

Derivation: By the interaction of calcium hydroxide and guaiacolmonosulfonic acid.

Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles.
Uses: Local anesthetic.
Fire hazard: None.
Railroad shipping regulations: None.

Guaiasanol* (Diethylglycocolguaiacol hydrochloride)
 $\text{CH}_3\text{O.C}_6\text{H}_4.\text{O.C}(\text{OCH}_2\text{N}(\text{C}_2\text{H}_5)_2)\text{HCl}$.
Color and properties: White crystals.
Constants: Melting-point 184°C .
Soluble in water; sparingly soluble in alcohol; insoluble in ether.
Derivation: Guaiacol is treated with chloroacetyl chloride and the reaction product is treated with diethylamine.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Guajava. See Guava.

Guanidine* (Iminourea) $\text{NHC}(\text{NH}_2)_2$.
Color and properties: Colorless crystals.
Soluble in water and alcohol.
Derivation. (a) By heating cyanamide with ammonium iodide; (b) By heating thiourea with ammonium thiocyanite; (c) By the action of aqua regia on dicyanodiamine.
Grades: Technical.
Containers: Tins.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Guano.

Derivation: The dried excrements, feathers and carcasses of sea fowl. Formed on certain islands near the coast of Peru and Chili.
Grades: Technical.
Containers: Burlap bags; barrels.
Uses: Fertilizer.
Fire hazard: None.
Railroad shipping regulations: None.

Guarana (Brazilian cacao).
Derivation: Dried paste consisting chiefly of crushed seeds of *Paullinia cupana*.
Habitat: Brazil.
Grades: U. S. P.
Containers: Tins.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Guaranham. See Monesia.

Guaranhem. See Monesia.

Guava (Common guava, Bay plum, Guajava, Djamböe).
Derivation: Leaves of *Psidium pyrifera*.
Habitat: Tropical Asia and America.
Grades: Technical.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Guhr. See Kieselgur.

Guignet's Green.*

Derivation: Chrome green made by fusing potassium chromate and boric acid. The mass is washed, ground and dried. The chromium borate formed is decomposed by water.
Grades: Technical.
Containers: Wooden kegs.
Uses: Paint pigment.
Fire hazard: None.
Railroad shipping regulations: None.

Guinea Grains. See *Amomum melegueta*.

Gujasanol* (Diethylglycocolguaiacol hydrochloride)
 $\text{OCH}_3\text{C}_6\text{H}_4.\text{O.C}(\text{OCH}_2\text{N}(\text{C}_2\text{H}_5)_2)\text{HCl}$.
Color and properties: Colorless crystals; faint guaiacol odor.
Constants: Melting-point 184°C .
Soluble in water; insoluble in alcohol and ether.
Derivation: By the action of hydrochloric acid on diethylglycocolguaiacol.

Grades: Technical.
Containers: Glass bottles.
Uses: Antiseptic.
Fire hazard: None.
Railroad shipping regulations: None.

Gum Acacia. See Gum Arabic

Gum Accroides (Black-boy gum, Xanthorrhoea resin).

Derivation: A resin obtained from several species of the Xanthorrhoea trees.

Habitat: Australia.

Soluble in alcohol.

Grades: Technical.

Containers: Bags.

Uses: Varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Ammoniac. See Ammoniac

Gum Animi.

Derivation: A resin found in two forms "fossil" and "recent," on the island of Zanzibar and the adjoining African mainland.

Constants: Specific gravity 1.062-1.068; melting-point 240°-250°C.

Insoluble in most solvents.

Grades: Technical.

Containers: Bags.

Uses: Varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Arabic (Gum acacia, Gum senegal).

Color and properties: Yellow, translucent tears or powder.

Derivation: From numerous plants of the Acacia family, mostly native in Africa.

Soluble in water; insoluble in alcohol and ether.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden kegs; bags.

Uses: Pharmacy; adhesives; inks; textile printing; confectionery.

Fire hazard: None.

Railroad shipping regulations: None.

Gum, Artificial. See Dextrin.

Gum Barbary, Brown. See Gum arabic.

Gum Benjamin. See Gum benzoin, Siam.

Gum Benzoin, Siam (Benzoin, Gum benjamin, Resin benzoin, Bitter-almond oil camphor).

Color and properties: Almond shaped, pale, reddish-brown tears.

Chief constituents: An ethereal oil, benzoic acid, vanillin, resins.

Derivation: Balsamic resin from *Styrax benzoin* and other species.

Habitat: Siam, Cambodia, Cochin, China and Sumatra.

Soluble in warm alcohol and carbon bisulfide; insoluble in water.

Grades: Technical; U. S. P.

Containers: Tins.

Uses: Medicine; perfumery; cosmetics.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Benzoin, Sumatra.

Differs from Gum benzoin, Siam, in many respects. The odor is not so strong and it does not melt so easily.

Generally contains 12 per cent to 15 per cent of woody matter.

Chief constituents: Cinnamic acid, benzoic acid, vanillin, resins.

Soluble in warm alcohol and carbon bisulfide; insoluble in water.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Cinnamic acid; varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

Gum, British. See Dextrin

Gum, Brown, Barbary.

Derivation: A gum obtained from a certain species of Acacia.

See Gum arabic.

Gum Camphor. See Camphor.

Gum, Cape.

Derivation: A gum obtained from a certain species of the Acacia tree.

See Gum arabic.

Gum Copal. See Copal.

Gum Cowrie. See Copal.

Gum Damar. See Gum dammar.

Gum Dammar (Gum damar, Resin damar).

Color and properties: Yellowish-white, semi-transparent, roundish, friable masses.

Constants: Specific gravity 1.04-1.12; melting-point 120°C.

Soluble in alcohol, ether, chloroform, carbon bisulfide, concentrated sulfuric acid and oil of turpentine.

Derivation: A resinous exudation from *Shorea wiesneri*.

Habitat: East Indies and Philippines.

Grades: Technical.

Containers: Bags.

Uses: Varnishes; lacquers.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Dragon's Blood. See Dragon's blood.

Gum Elemi.

Derivation: A resin from certain trees, *Canarium commune*, in the Philippine Islands, *Canarium maritimum* in Mauritius and *Amyris elemifera* in Mexico and Brazil.

Soluble in alcohol, benzol and turpentine; insoluble in water.

Grades: Technical.

Containers: Bags.

Uses: Varnishes; lacquers.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Frankincense. See Gum thus.

Gum Gallipot.

Derivation: A resin similar to Burgundy pitch obtained from the *Pinus maritima*.

Gum Ghatti. One of the acacia gums. See Gum arabic.

Gum Indian. A gum obtained from a certain species of the Acacia tree. See Gum arabic.

Gum Jelutong. See Gum pontianak.

Gum Juniper. See Gum sandarac.

Gum Kauri.

Constants: Specific gravity 1.050; melting-point 182°C.-232°C.

Soluble in alcohol, turpentine, petroleum spirit and benzol; insoluble in water.

Derivation: A fossil resin from Auckland, New Zealand.

Grades: Technical.

Containers: Bags.

Uses: Varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Kaurie. See Copal.

Gum Kino. See Kino.

Gum Manila Copal.

Color and properties: Generally pebble-like pieces of a pale brownish color.

Constants: Specific gravity 1.002; melting-point 230°-250°C.

Soluble in ether, methyl alcohol and ethyl alcohol; partially soluble in amyl alcohol; insoluble in water.

Derivation: A copal resin imported from the Philippine Islands.

Grades: Technical.

Containers: Bags.

Uses: Spirit varnishes; enamel paints.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Mastic.

Color and properties: Small, yellow, translucent tears.

Soluble in acetone, alcohol and oil of turpentine; insoluble in water.

Derivation: From *Pistacia lentiscus*.

Grades: Technical.

Containers: Bags.

Uses: Varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

See also Mastic.

Gum Mogador.

Derivation: A gum from a certain species of Acacia.

See Gum Arabic.

Gum Opium. Crude Opium.

Gum Oriental, Sweet. See *Styrax*.

Gum Plant. See *Grindelia*.

Gum Pontianak (Jelutong).

Derivation: From species of *Dyera* indigenous to Malacca and Borneo and from the quayule from *Parthenium*, a shrub indigenous to the Chihuahuan Desert of Mexico.

Grades: Technical.

Containers: Bags.

Uses: Rubber manufacture; chewing gum.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Resin Euphorbium. See *Euphorbium*.**Gum Sandarac.**

Color and properties: Yellow, brittle, translucent, amorphous lumps or powder.

Soluble in alcohol, ether, amyl alcohol and hot caustic alkali; partially soluble in volatile oils, carbon bisulfide, chloroform and oil of turpentine; insoluble in benzine, benzol and water.

Derivation: The resin from *Callitris quadrivalvis*, indigenous in Morocco

Grades: Technical.

Containers: Bags.

Uses: Incense; varnishes, lacquers, dental cements.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Senegal. See *Gum arabic*.**Gum Sennaar.**

Derivation: A gum obtained from a certain species of *Acacia*.

See *Gum arabic*.

Gum Shellac. See *Shellac*.**Gum, Soft Copal.**

Derivation: A gum from living trees in Java, Sumatra, the Philippine Islands and New Zealand.

Grades: Technical.

Containers: Bags.

Uses: Varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

Gum, Starch. See *Dextrin*.**Gum Sweet, Oriental.** See *Styrax*.**Gum Thus (Gum Frankincense).**

Derivation: A resin from *Boswellia carterii* and other species of *Boswellia*.

Habitat: Nubia, Egypt and Somaliland

Grades: Technical.

Containers: Kegs.

Uses: Pharmacy; incense.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Tragacanth.

Color and properties: Dull white, translucent plates or yellowish powder.

Soluble in alkaline solutions, aqueous hydrogen peroxide solution; swells up with water; insoluble in alcohol.

Derivation: An exudation from *Astragalus gummifer*.

Habitat: Levant.

Grades: Technical; U. S. P.

Containers: Kegs.

Uses: Pharmacy; adhesives; leather dressing; calico printing; emulsifying agent.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Vegetable. See *Dextrin*.

Gum Wattle. A gum obtained from a certain species of *Acacia*. See *Gum arabic*.

Gum-wood. See *Eucalyptus*.**Gum Zanzibar.** See *Gum animi*.**Gummi Indicum, B. P.** See *Gum arabic*.**Guncotton.** See *Nitrocellulose*.**Guru.** See *Cola*.**Gutta-percha.**

Color and properties: Yellowish or grayish, hard, leathery sticks. Constants: Melting-point 120°C.

Soluble in carbon bisulfide, chloroform and warm benzol; insoluble in water.

Derivation: From the juice of *Isonandra gutta*, a tree native in the East Indies.

Grades: Technical.

Containers: Bags.

Gum Dammar (Gum damar, Resin damar).

Color and properties: Yellowish-white, semi-transparent, roundish, friable masses.

Constants: Specific gravity 1.04-1.12; melting-point 120°C.

Soluble in alcohol, ether, chloroform, carbon bisulfide, concentrated sulfuric acid and oil of turpentine.

Derivation: A resinous exudation from *Shorea wiesneri*.

Habitat: East Indies and Philippines.

Grades: Technical.

Containers: Bags.

Uses: Varnishes; lacquers.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Dragon's Blood. See Dragon's blood.

Gum Elemi.

Derivation: A resin from certain trees, *Canarium commune*, in the Philippine Islands, *Canarium maritimum* in Mauritius and *Amyris elemifera* in Mexico and Brazil.

Soluble in alcohol, benzol and turpentine; insoluble in water.

Grades: Technical.

Containers: Bags.

Uses: Varnishes; lacquers.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Frankincense. See Gum thus.

Gum Gallipot.

Derivation: A resin similar to Burgundy pitch obtained from the *Pinus maritima*.

Gum Ghatti. One of the acacia gums. See Gum arabic.

Gum Indian. A gum obtained from a certain species of the Acacia tree. See Gum arabic.

Gum Jelutong. See Gum pontianak.

Gum Juniper. See Gum sandarac.

Gum Kauri.

Constants: Specific gravity 1.050; melting-point 182°C.-232°C.

Soluble in alcohol, turpentine, petroleum spirit and benzol; insoluble in water.

Derivation: A fossil resin from Auckland, New Zealand.

Grades: Technical.

Containers: Bags.

Uses: Varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Kaurie. See Copal.

Gum Kino. See Kino.

Gum Manila Copal.

Color and properties: Generally pebble-like pieces of a pale brownish color.

Constants: Specific gravity 1.002; melting-point 230°-250°C.

Soluble in ether, methyl alcohol and ethyl alcohol; partially soluble in amyl alcohol; insoluble in water.

Derivation: A copal resin imported from the Philippine Islands.

Grades: Technical.

Containers: Bags.

Uses: Spirit varnishes; enamel paints.

Fire hazard: None.

Railroad shipping regulations: None.

Gum Mastic.

Color and properties: Small, yellow, translucent tears.

Soluble in acetone, alcohol and oil of turpentine; insoluble in water.

Derivation: From *Pistacia lentiscus*.

Grades: Technical.

Containers: Bags.

Uses: Varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

See also Mastic.

Gum Mogador.

Derivation: A gum from a certain species of Acacia.

See Gum Arabic.

Gum Opium. Crude Opium.

Gum Oriental, Sweet. See *Styrax*.

Gum Plant. See *Grindelia*.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: By expressing and boiling halibut livers.

Method of purification: Filtration.

Grades: Crude, refined.

Containers: Wooden barrels.

Uses: Leather dressing.

Fire hazard: None.

Railroad shipping regulations: None.

Halite. See Sodium chloride.

Halloysite. A clay-like, natural aluminum silicate, resembling kaolinite but amorphous and containing a larger, but uncertain quantity of water, $2\text{H}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot \text{Aq}$. Alabama and Georgia.

Halotrichite. A natural hydrous sulfate of iron and aluminum, $\text{FeSO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$. New Mexico.

"Halowax." A proprietary name for a chlorinated naphthalene (hexa), non-inflammable.

Hamamelidis Cortex, B. P. See Hamamelis.

Hamamelidis Folia, B. P. See Hamamelis.

Hamamelis* (Witch-hazel; Winter bloom; Snapping hazel; Striped alder; Tobacco wood; Wych-hazel).

Derivation: Dried leaves and bark (also twigs) of *Hamamelis virginiana*.

Habitat: North America (New England to Minnesota, southward to Louisiana).

Grades: Technical; U. S. P.; B. P.; Extract.

Containers: Bags.

Uses: Medicine; pharmacy; toilet preparations.

Fire hazard: None.

Railroad shipping regulations: None.

Hard Coal. See Anthracite.

"Hardened" Oil. See Hydrogenated oils.

Harmaline. See Fuchsine.

Hartshorn. See Ammonium carbonate.

Hartshorn, Spirit of. An alcoholic or aqueous solution of ammonia.

Hatchetin, also called "Hatchettite," an inflammable mineral tallow, found in bogs and coal beds.

Hayo. See Coca.

Heavy Spar. See Barite.

Hedecatylic Alcohol. See Cetylic alcohol.

Hedeoma* (Pennyroyal; Squaw mint). Derivation: Dried leaves and flowering tops of *Hedeoma pulegioides*.

Habitat: U. S.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hedeoma Oil* (American pennyroyal oil).

Color and properties: A pale yellowish limpid liquid, essential oil; characteristic, pungent, mint-like odor and taste.

Constants: Specific gravity 0.930-0.940; optical rotation $+18^\circ$ to $+21^\circ$.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the leaves and tops of *Hedeoma pulegioides*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; insectifuge.

Fire hazard: None.

Railroad shipping regulations: None.

Helcosol. See Bismuth pyrogallate.

Helenin (Inula; Elecampane camphor; Alant camphor; Alant acid anhydride; Alantolactone).

Color and properties: White crystals. Constants. Melting-point 64° - 66°C ;

boiling-point 192°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: A stearoptene from *Inula helenium*.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None. See also Inulin.

Helenium. See *Inula*.

Helianthine. Methyl orange.

Helianthus* (Sunflower).

Derivation: Flowers and seeds of *Helianthus annuus*.

Grades: Technical.

Containers: Bags.

Uses: Source of sunflower-seed oil; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Helichrysum (Immortelles).

Derivation: Flowers of *Helichrysum arenarium*.

Habitat: Europe.

Grades: Technical.

Containers: Bags.

Uses: Medicine; preservative for furs.

Fire hazard: None.

Railroad shipping regulations: None.

Heliotropin* (Piperonal; Piperonyl aldehyde) $C_6H_5(CH_2OO)COH$.

Color and properties: White, shining crystals.

Constants: Melting-point $37^\circ C$; boiling-point $263^\circ C$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By the oxidation of isosafrol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Helium* He.

Color and properties: Colorless odorless, non-inflammable gas.

Constants: Specific gravity 0.1368 (Air) 1.08 (Hydrogen); melting-point

$-269^\circ C$; boiling-point $-268.75^\circ C$.

Soluble in water.

Derivation: From natural gas or nitrogen (from air).

Grades: Technical.

Containers: Steel bottles.

Uses: Balloon and airship filler instead of hydrogen; electric lamps.

Fire hazard: None.

Railroad shipping regulations: Green label.

Helmet Flower. See *Scutellaria*.

Hematine Crystals. See Logwood crystals.

Hematine Extract. See Logwood extract.

Hematine Liquid. See Logwood extract.

Hematine Paste. See Logwood extract.

Hematite (Specular iron; Red iron ore) Natural iron oxide Fe_2O_3 . Contains 70 per cent iron (also see Ferric oxide, Red). The principal American sources are Minnesota, Michigan, Alabama, New York, Wisconsin, Cuba, Canada and Newfoundland.

Hematoidin. See Bilirubin.

Hematoxylin. See Haematoxylin.

Hemlock (Conium).

Derivation: From the bark of the hemlock fir, *Pinus canadensis*.

Habitat: Northern and Western parts of the United States and Canada.

Grades: 25 per cent Tannin.

Containers: Extract; wooden barrels; tank cars.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Hemlock Oil.*

Color and properties: A colorless liquid; agreeable odor, resembling spruce oil.

Constants: Specific gravity 0.913; optical rotation $-23^{\circ} 55'$.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: Distilled from the leaves and twigs of *Tsuga canadensis*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hemp, Canadian. See *Apocynum*.

Hemp Oil. See Hemp-seed oil.

Hemp-seed Oil (Hemp oil).

Color and properties: Light green, fixed, non-drying liquid; becomes brownish-yellow on standing.

Constants: Specific gravity 0.9255-0.9280; saponification value 172-192; Maumené number 97; iodine number 148.

Soluble in ether, benzol and carbon bisulfide.

Derivation: From hemp-seed, *Cannabis sativa*, by pressing or extraction.

Grades: Technical.

Containers: Tins; iron drums.

Uses: Illumination; soft soap; paints; varnishes.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Henbane. See *Hyoscyamus*.

Henna (Egyptian privet; Flower-of-paradise).

Derivation: Leaves of *Lawsonia alba*.

Habitat: Orient; Mediterranean region; Southern Asia and Australia.

Grades: Technical.

Containers: Bags.

Uses: Medicine; hair dye.

Fire hazard: None.

Railroad shipping regulations: None.

Hepar Antimony. Potassium-antimony sulfide or Sodium-antimony sulfide.

Hepar Calcia. See Calcium sulfide.

Hepar Sulfuris. See Potassium sulfide.

Hepatica. See Liverwort.

Hepotic Acid. See Acid oenanthic.

Heptane* (Heptyl hydride; Methyl hexane; Normal heptane; Dipropylmethane) $\text{CH}_3(\text{CH}_2)_5\text{CH}_3$.

Color and properties: Volatile, colorless liquid; highly inflammable.

Constants: Specific gravity 0.694; boiling-point 95° - 98°C .

Soluble in alcohol, ether and chloroform; insoluble in water.

Derivation: (a) By fractional distillation of petroleum. (b) From the oleoresin of *Pinus sabiana*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; tins.

Uses: Anesthetic; solvent.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Heptanal. See *Cenanthol*.

Heptoic Acid. See Acid *œnanthic*.

Heptoic Aldehyde. See *Cenanthol*.

Heptyl Hydride. See Heptane.

Heptylic Acid. See Acid *œnanthic*.

Heptylic Alcohol* $\text{CH}_3(\text{CH}_2)_6\text{OH}$.

Color and properties: Colorless, fragrant liquid.

Constants: Specific gravity 0.830; melting-point -36.5°C ; boiling-point 175°C .

Soluble in water, alcohol and ether. Derivation: From *œnanthol* by reduction.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Heroin* (Diacetylmorphine)

$\text{C}_{17}\text{H}_{17}(\text{C}_2\text{H}_3\text{O}_2)_2\text{NO}_3$.

Color and properties: White, crystalline, odorless, bitter powder; poisonous; habit forming drug.

Constants: Melting-point 171°C .

Soluble in hot alcohol, chloroform and benzol; insoluble in water and ether.

Derivation: By the acetylation of morphine.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles; tins.

Uses: Medicine (also used extensively in the form of the hydrochloride).

Fire hazard: None.

Railroad shipping regulations: None.

Herring Oil.

Color and properties: Pale yellow to dark-red liquid.

Constants: Specific gravity 0.9202-0.932; saponification value 179-194; iodine value 139-142; refractive index 1.478.

Soluble in ether, chloroform, benzene and carbon bisulfide.

Derivation: By boiling and pressing herring.

Method of purification: Filtration.

Grades: No. 1; No. 2; No. 2, blown; winter-pressed.

Containers: Wooden barrels.

Uses: Soap, leather dressing.

Fire hazard: None.

Railroad shipping regulations: None.

Hexachlorobenzene* C_6Cl_6 .

Color and properties: White needles.

Constants: Melting-point 229°C ; boiling-point 69°C .

Soluble in benzol and boiling alcohol; insoluble in water.

Derivation: By heating hexyl iodide with iodine chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Hexachlorobenzol. See Hexachlorobenzene.

Hexachloroethane. See Carbon trichloride

Hexahydropyridine. Piperidine.

Hexahydrothymol. See Menthol.

Hexamethylenamina, U. S. P. See Hexamethylenetetramine.

Hexamethylenetetramine* (Cystamin; Cystogen; Fornin; Aminoform; Urotropin; Hexamine; erroneously, "Hexamethylenamine").
(CH_2)₆N₄.

Color and properties: White, crystalline powder.

Soluble in water and alcohol; insoluble in ether.

Derivation: By the action of ammonia on formaldehyde.

Method of purification: Recrystallization.

Grades: Technical, B. P.

Containers: Tins; glass bottles.

Uses: Medicine; rubber accelerator; mixed with sodium phenate and sodium hydroxide, as an absorbent for phosgene in military gas masks; synthetic resins.

Fire hazard: None.

Railroad shipping regulations: None.

Hexamina, B. P. See Hexamethylenetetramine.

Hexamine. See Hexamethylenetetramine.

Hexane* (Hexyl hydride; Caproyl hydride) C_6H_{14} .

Color and properties: Colorless, volatile liquid; faint, peculiar odor; highly inflammable.

Constants: Specific gravity 0.660; boiling-point 32°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By fractional distillation from petroleum.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Solvent.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Hexoic Acid. See Acid caproic.

Hexyl Hydride. See Hexane.

Hexylic Acid. See Acid caproic.

Hiddenite. An emerald-green spodumene. Used as a gem. See Spodumene. North Carolina.

"Hi-Flash" Naphtha. See Naphtha, High-flash.

High Cranberry. See Viburnum opulus.

Hinsdalite. A mineral related to alunite, but with replacements as indicated in the following formula:
 $2\text{PbO}_3\text{Al}_2\text{O}_3\cdot\text{P}_2\text{O}_5\cdot 6\text{H}_2\text{O}$. Colorado.

Hippuric Acid. See Acid hippuric.

"Hirathiol."* Proprietary name of a compound used as a substitute for ichthyol.

Hirudo, B. P. Leeches.

Hoarhound. See Marrubium.

Hog's Bean. See Hyoscyamus.

Hog-weed. See Scoparius.

Homatropinae Hydrobromidum, U. S. P., B. P. See Homatropine hydrobromide.

Homatropine* $\text{C}_{10}\text{H}_{21}\text{NO}_3$.
Color and properties: White crystals; poisonous.
Constants: Melting-point 95.5°C .
Slightly soluble in water.
Derivation: By evaporating a mixture of atropine-mandelic acid with dilute hydrochloric acid.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Homatropine Hydrobromide*
 $\text{C}_{10}\text{H}_{21}\text{NO}_3\text{Br}$.
Color and properties: White crystals; poisonous.
Constants: Melting-point 213.8°C .
Soluble in water and alcohol; insoluble in ether.

Derivation: By the action of hydrobromic acid on homatropine.
Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Homopyrocatecholmonomethyl ester.
Creosol.

Homoguaiaicol. Creosol.

Honduras Bark. See Cascara amarga.

Honey Sugar. See Dextrose.

Hops. See Humulus.

Hop Oil.*
Color and properties: A green essential oil; strong penetrating odor.
Chief known constituents: Humulene, geraniol, terpenes.
Constants: Specific gravity 0.855-0.880.
Soluble in alcohol, ether and chloroform.
Derivation: Distilled from the strobiles of Humulus lupulus.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles; iron drums.
Uses: Aromatizing beer.
Fire hazard: None.
Railroad shipping regulations: None.

Horehound. See Marrubium.

Horn Silver. See Cerargyrite.

Horse-heal. See Inula.

Horse Oil.*
Color and properties: Yellow-brownish yellow liquid.
Soluble in chloroform, benzol and ether.
Derivation: By pressing horse fat and filtering.
Grades: Technical.
Containers: Wooden barrels.

Uses: Soap stock.
Fire hazard: None.
Railroad shipping regulations: None.

Horsemint Oil* (*Monarda* oil).

Color and properties: A yellowish-red or brownish-red essential oil; strong thymie-like odor.

Constants: Specific gravity 0.920 to 0.936.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the herb, *Monarda punctata*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Preparation of liniments.

Fire hazard: None.

Railroad shipping regulations: None.

Horseradish Root. See *Armoraciae radix*.

Horsetail. See *Equisetum*.

Horseweed. See *Erigeron*.

Huanuco Bark. See *Cinchona bark*, Loxa.

Huber's Reagent. For free mineral acid. An aqueous solution of ammonium molybdate and potassium ferrocyanide. With the exception of boric acid and arsenic trioxide, free mineral acids afford a reddish-brown precipitate, or a turbidity with the reagent.

Hubnerite. Nearly pure, natural manganese tungstate, $MnWO_4$. When pure it contains 76.6 per cent tungsten trioxide, WO_3 . Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, South Dakota, Utah and Washington.

Humulus* (Hops).

Derivation: Carefully dried strobiles of *Humulus lupulus*.

Habitat: Europe, Asia and North America.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine; brewing beer and beer substitutes.

Fire hazard: None.

Railroad shipping regulations: None.

Hyalite. A variety of opal (hydrous silica) which occurs in clear globular or botryoidal forms resembling drops of melted glass. Georgia and Kansas.

Hydrargyri Chloridum Corrosivum, U. S. P. See Mercuric chloride.

Hydrargyri Chloridum Mite, U. S. P., B. P. See Mercurous chloride.

Hydrargyri Iodidum Flavum, U. S. P. Mercurous iodide.

Hydrargyri Iodidum Rubrum, U. S. P., B. P. See Mercuric iodide.

Hydrargyri Oxidum Flavum, U. S. P., B. P. Mercuric oxide, Yellow.

Hydrargyri Oxidum Rubrum, U. S. P., B. P. See Mercuric oxide, Red.

Hydrargyri Perchloridum, B. P. See Mercuric chloride.

Hydrargyri Salicylas, U. S. P. Mercuric salicylate.

Hydrargyri Subchloridum, B. P. See Mercurous chloride.

Hydrargyrum, U. S. P., B. P. See Mercury.

Hydrargyrum Ammoniatum, U. S. P., B. P. Ammoniated mercury.

Hydrargyrum cum Creta, U. S. P., B. P. Mercury with chalk.

Hydrargyrum Oleatum, B. P. Oleated mercury.

Hydrastina, U. S. P. See Hydrastine.

Hydrastinae Hydrochloridum, U. S. P. See Hydrastine hydrochloride.

Hydrastine* $C_{21}H_{21}NO_6$.

Color and properties: White pulverulent alkaloid; poisonous.

Constants: Melting-point 131°C .

Slightly soluble in water, alcohol and ether.

Derivation: By extraction of the root of *Hydrastis canadensis*, with subsequent crystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hydrastine Hydrochloride

$C_{21}H_{21}NO_6.HCl$.

Color and properties: White crystals; poisonous.

Soluble in water and ether.

Derivation: By the action of hydrochloric acid on hydrastine.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hydrastinine* $C_{11}H_{13}NO_3$.

Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point $116^{\circ}\text{--}117^{\circ}\text{C}$.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By extraction of the root of *Hydrastis canadensis*, with subsequent crystallization. The salts are obtained by the action of the respective acid on the alkaloid.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hydrastis* (Golden seal; Orange root; Yellow root; Yellow puccoon; Turmeric root; Indian turmeric).

Derivation: Dried rhizomes and roots of *Hydrastis canadensis*.

Habitat: North America.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hydrastis Rhizoma, B. P. See *Hydrastis*.

Hydrazine* NH_2NH_2 .

Color and properties: Colorless liquid.

Constants: Specific gravity 1.013; melting-point 1.4°C ; boiling-point 113.5°C .

Soluble in water and alcohol.

Derivation: By reduction of nitrosamine with zinc dust and acetic acid.

Grades: Technical.

Containers: Iron Drums.

Uses: Organic synthesis; phenylhydrazine.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Hydriodic Acid. See Acid hydriodic.

Hydroberberine* $C_{20}H_{21}NO_4$.

Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point 167°C .

Soluble in alcohol; insoluble in water.

Derivation: By reducing berberine with nascent hydrogen.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hydrobromic Acid. See Acid hydrobromic.

Hydrobromic Ether. See Ethyl bromide.

Hydrochinone. See Hydroquinone.

Hydrochloric Acid. See Acid hydrochloric.

Hydrocotarnine* $C_{12}H_{15}NO_8 \cdot \frac{1}{2}H_2O$.
Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point 50° - 55° C.

Soluble in alcohol and ether.

Derivation: From opium.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hydrocyanic Acid. See Acid hydrocyanic.

Hydrodisodium Phosphate. See Sodium phosphate, Dibasic.

Hydrofluoric Acid. See Acid hydrofluoric.

Hydrofluosilicic Acid. See Acid hydrofluosilicic.

Hydrogen* H_2 .

Color and properties: Colorless gas; highly inflammable.

Constants: Specific gravity 0.06949; melting-point -259° C.; boiling-point -252° C.

Soluble in water.

Derivation: (a) By the electrolytic dissociation of water as a by-product in the manufacture of caustic alkali and electrolytic oxygen. (b) By passing a current of steam through heated iron pipes. (c) By the action of dilute sulfuric acid on iron filings. (d) By the silico process in which a silicon alloy (ferro-silicon, manganese-silicon or silico-spiegel) is allowed to act on a hot, strong solution of caustic soda. (e) By the action of water on an alloy of magnesium and lead. (f) By removal of the carbon monoxide from water gas by absorption in hot concentrated caustic alkali. (g) By passing steam over red hot iron, intermittently with a reducing agent.

Grades: Technical; pure.

Containers: Steel bottles.

Uses: Hydrogenation of oils; oxy-hydrogen flame for welding; balloons and airships; organic preparations.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Hydrogen Bromide. See Acid hydrobromic.

Hydrogen Carboxylic Acid. See Acid formic.

Hydrogen Chloride. See Acid hydrochloric.

Hydrogen Cyanide. See Acid hydrocyanic.

Hydrogen Dioxide. See Hydrogen peroxide.

Hydrogen Fluoride. See Acid hydrofluoric.

Hydrogen Iodide. See Acid hydriodic.

Hydrogen Nitrate. See Acid nitric.

Hydrogen Peroxide* H_2O_2 .

Color and properties: Colorless, heavy liquid, appearing in commerce in the form of an aqueous solution. Keep cool and dark. A powerful oxidizing agent.

Constants: (Anhydrous); Specific gravity 1.4584; melting-point -2° C.; boiling-point 80.2° C.

Soluble in water, alcohol and ether.

Derivation: (a) By the action of dilute mineral acid, usually sulfuric, on barium peroxide. (b) By treating barium peroxide with carbon dioxide under pressure, in presence of water.

Impurities: The commercial article generally contains a little acetanilide, added to preserve the peroxide solution. Inferior brands sometimes contain free sulfuric acid.

Grades: Technical; U. S. P.; 30 per cent by weight, Sp. G. 1.111; 3 per cent by weight.

Containers: Glass bottles; iron drums.

Uses: Bleaching; antiseptic; oxidizing agent.

Fire hazard: None.

Railroad shipping regulations: None.

Hydrogen Sulfide (Sulfuretted hydrogen) H_2S .

Color and properties: Colorless, inflammable gas; offensive odor; sweetish taste.

Constants: Specific gravity 1.1895; melting-point -83.8° C.; boiling-point -60.2° C.

Soluble in water and alcohol.

Derivation: (a) By the action of dilute sulfuric acid on a sulfide, usually iron sulfide. (b) By direct union of hydrogen and sulfur vapor at a definite temperature and pressure. (c) By heating sulfur with paraffin wax.
Containers: Not an article of commerce, prepared as wanted or kept in glass bottles in aqueous solution.
Uses: Purification of hydrochloric and sulfuric acids; precipitating sulfides of metals; reagent in analytic chemistry.

Hydrogen Tellurate. See Acid telluric.

Hydrogenated Oils* ("Hardened" oils)

Oils treated with hydrogen in presence of a catalyst, thereby converting all or part of the oleic acid or olein into stearic acid or stearin. The oils thus treated are rendered suitable for human consumption, the manufacture of hard soaps (where previously they could only be used for making soft soaps), and for making lubricants. Hydrogenated oils are also used for making lard substitutes, tanner's greases, varnishes, etc.

Hydrohydrastinine* $C_{11}H_{13}NO_2$.

Color and properties: White crystalline alkaloid; poisonous.
Constants: Melting-point 66°C .
Soluble in alcohol and ether.
Derivation: By extraction of *Hydrastis canadensis*, and subsequent crystallization.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Hydrol, Michler's. See Tetramethyldiaminobenzhydrol.

Hydroquinone* (Para-dioxybenzene)

$C_6H_4(\text{OH})_2$.
Color and properties: White crystals.
Constants: Specific gravity 1.330; melting-point 169°C .; boiling-point 285°C .
Soluble in water, alcohol and ether.
Derivation: (a) By oxidizing aniline in the cold with sulfuric and chromic

acids. (b) By reducing quinone with sulfurous acid.

Method of purification: Crystallization.

Grades: Technical; pure.

Containers: Barrels; boxes; glass bottles.

Uses: Photographic developer; organic synthesis; adurol.

Fire hazard: None.

Railroad shipping regulations: None.

Hydrosilicofluoric Acid. See Acid hydrofluosilicic.

Hydroxyacetic Acid. See Acid glycolic.

Hydroxylamine* (Oxammonium)

NH_2OH .

Color and properties: Colorless crystals; decomposes when heated and explodes at 130°C .

Constants: Specific gravity 1.227; melting-point 33°C .; boiling-point 70°C .

Soluble in alcohol, acids and cold water.

Derivation: By decomposing hydroxylamine hydrochloride with a base and distilling in vacuo.

Method of purification: Redistillation.

Grades: Technical; pure.

Containers: Tins; glass bottles.

Uses: Reducing agent; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Hydroxylamine Hydrochloride* (Oxammonium hydrochloride)

$\text{NH}_2\text{OH}_2\text{HCl}$.

Color and properties: Colorless crystals.

Constants: Melting-point 151°C .; boiling-point: Decomposes.

Soluble in water and alcohol; insoluble in ether.

Derivation: By the action of hydrochloric acid on moist mercury fulminate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Organic synthesis; photographic developer; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hydroxylamine Sulfate* (Oxammonium sulfate) $(\text{NH}_2\text{OH})_2 \cdot \text{H}_2\text{SO}_4$.

Color and properties: Colorless crystals; solution has a corrosive action on the skin.

Constants: Melting-point 140°C .

Soluble in water, alcohol and ether.

Derivation: (a) By the electrolytic reduction of nitric acid in presence of hydrochloric acid. (b) Soda ash is added to a cooled solution of sodium nitrite and sulfur dioxide passed into the solution which must constantly be kept cooled below 0°C . The solution of disulfonic acid is decanted, concentrated, acidified if necessary and heated. It is then almost completely neutralized with sodium carbonate, allowed to stand for a time, then filtered.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Organic synthesis; dimethylglyoxime.

Fire hazard: None.

Railroad shipping regulations: None.

Hydroxybenzene. See Phenol.

Hydroxybenzol. See Phenol.

Hydrozincite (Zinc bloom). A natural, basic zinc carbonate, exact composition uncertain, perhaps $3\text{ZnO} \cdot \text{CO}_2 \cdot 2\text{H}_2\text{O}$. Arkansas, Kansas and New Mexico.

Hyoscinae Hydrobromidum, B. P. See Hyoscine hydrobromide.

Hyoscine* (Scopolamine) $\text{C}_{17}\text{H}_{21}\text{NO}_4$.

Color and properties: Thick, colorless, sirupy liquid alkaloid; poisonous.

Constants: Melting-point $50^\circ\text{--}50^\circ\text{C}$.

Soluble in water, alcohol and ether.

Derivation: By extraction of various solanaceae, and subsequent crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscine Hydrobromide*

$(\text{C}_{17}\text{H}_{21}\text{NO}_4)\text{HBr} \cdot 3\text{H}_2\text{O}$.

Color and properties: White crystals; poisonous.

Constants: Melting-point 101°C .

Soluble in water and alcohol; insoluble in ether.

Derivation: By the action of hydrobromic acid on hyoscine.

Method of purification: Crystallization.

Grades: Technical; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscine Sulfate*

$(\text{C}_{17}\text{H}_{21}\text{NO}_4)_2 \cdot \text{H}_2\text{SO}_4 \cdot 2\text{H}_2\text{O}$.

Color and properties: White crystals; poisonous.

Soluble in water and alcohol.

Derivation: By the action of sulfuric acid on hyoscine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscyami Folia, B. P. See Hyoscyamus.

Hyoscyaminae Hydrobromidum, U. S. P., B. P. See Hyoscyamine hydrobromide.

Hyoscyaminae Sulfas, B. P. See Hyoscyamine sulfate.

Hyoscyamine* ($\text{C}_{17}\text{H}_{23}\text{NO}_8$).

Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point 108.5°C .

Derivation: By extraction of Belladonna or Scopolia roots, and subsequent crystallization.

Grades: Technical.

Containers: Glass bottles

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscyamine Hydrobromide* $C_{17}H_{23}NO_3 \cdot HBr$.

Color and properties: White crystals; poisonous.

Constants: Melting-point 191° - $192^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By the action of hydrobromic acid on hyoscyamine.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscyamine Hydrochloride* $C_{17}H_{23}NO_3 \cdot HCl$.

Color and properties: White crystals; poisonous.

Soluble in water and alcohol.

Derivation: By the action of hydrochloric acid on hyoscyamine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscyamine Sulfate* $(C_{17}H_{23}NO_3)_2 \cdot H_2SO_4$.

Color and properties: White crystals; poisonous.

Constants: Melting-point $198.9^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By the action of sulfuric acid on hyoscyamine.

Method of purification: Crystallization.

Grades: Technical; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscyamus* (Henbane; Hog's bean; Insane root; Poison tobacco; Black henbane).Derivation: Dried leaves and flowering tops of *Hyoscyamus niger*.

Habitat: Europe, Asia and United

States; cultivated in England.

Grade: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hypericum. See page 505.**Hypnone.** See Acetophenone.**"Hypo."** See Sodium thiosulfate.**Hypophosphorous Acid.** See Acid hypophosphorous.**Hypophysis Sicca, U. S. P.** Hypophysis, Desiccated.**Hypovanadic Hydrochloride.** See Vanadium chloride.**Hyssop Oil.**

Color and properties: A colorless, liquid essential oil.

Constants: Specific gravity 0.932.

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from the herb, *Hyssopus officinalis*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; preparation of liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

Fire hazard: None.

Railroad shipping regulations: None.

Hydroxylamine Sulfate* (Oxammonium sulfate) $(\text{NH}_2\text{OH})_2 \cdot \text{H}_2\text{SO}_4$.

Color and properties: Colorless crystals; solution has a corrosive action on the skin.

Constants: Melting-point 140°C .

Soluble in water, alcohol and ether.

Derivation: (a) By the electrolytic reduction of nitric acid in presence of hydrochloric acid. (b) Soda ash is added to a cooled solution of sodium nitrite and sulfur dioxide passed into the solution which must constantly be kept cooled below 0°C . The solution of disulfonic acid is decanted, concentrated, acidified if necessary and heated. It is then almost completely neutralized with sodium carbonate, allowed to stand for a time, then filtered.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Organic synthesis; dimethylglyoxime.

Fire hazard: None.

Railroad shipping regulations: None.

Hydroxybenzene. See Phenol.

Hydroxybenzol. See Phenol.

Hydrozincite (Zinc bloom). A natural, basic zinc carbonate, exact composition uncertain, perhaps $3\text{ZnO} \cdot \text{CO}_2 \cdot 2\text{H}_2\text{O}$. Arkansas, Kansas and New Mexico.

Hyoscine Hydrobromidum, B. P. See Hyoscine hydrobromide.

Hyoscine* (Scopolamine) $\text{C}_{17}\text{H}_{21}\text{NO}_4$.

Color and properties: Thick, colorless, sirupy liquid alkaloid; poisonous.

Constants: Melting-point $50^\circ\text{--}50^\circ\text{C}$.

Soluble in water, alcohol and ether.

Derivation: By extraction of various solanaceae, and subsequent crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscine Hydrobromide*

$(\text{C}_{17}\text{H}_{21}\text{NO}_4)\text{HBr} \cdot 3\text{H}_2\text{O}$.

Color and properties: White crystals; poisonous.

Constants: Melting-point 101°C .

Soluble in water and alcohol; insoluble in ether.

Derivation: By the action of hydrobromic acid on hyoscine.

Method of purification: Crystallization.

Grades: Technical; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscine Sulfate*

$(\text{C}_{17}\text{H}_{21}\text{NO}_4)_2 \cdot \text{H}_2\text{SO}_4 \cdot 2\text{H}_2\text{O}$.

Color and properties: White crystals; poisonous.

Soluble in water and alcohol.

Derivation: By the action of sulfuric acid on hyoscine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Hyoscyami Folia, B. P. See Hyoscyamus.

Hyoscyaminae Hydrobromidum, U. S. P., B. P. See Hyoscyamine hydrobromide.

Hyoscyaminae Sulfas, B. P. See Hyoscyamine sulfate.

Hyoscyamine* ($\text{C}_{17}\text{H}_{23}\text{NO}_8$).

Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point 108.5°C .

Derivation: By extraction of Belladonna or Scopolia roots, and subsequent crystallization.

Imperatoria* (Master-wort; Felon grass; Felon-wort).

Derivation: Rhizome of *Imperatoria ostruthium*.

Habitat: Central and Southern Europe and U. S.

Grades: Technical.

Containers: Boxes.

Uses: Medicine; manufacture of liqueurs.

Fire hazard: None.

Railroad shipping regulations: None.

Imperial Green. See Copper acetoarsenite.

Impsonite. An asphalt much like albertite, but almost insoluble in turpentine. Oklahoma.

Indene. See Para-coumarone.

India-rubber. See Caoutchouc, page 503.

Indian Arrow-wood. See *Euonymus*.

Indian Balsam. See Balsam, Peru.

Indian Barley Caustic. See Sbradilla.

Indian Cannabis. See *Cannabis indica*.

Indian Corn. Maize.

Indian Hemp. See *Cannabis indica*.

Indian Laburnum. See *Cassia fistula*.

Indian Physic. See *Gillenia*.

Indian Pink. See *Spigelia*.

Indian Poke. See *Veratrum*.

Indian Red.*

Color and properties: A pale red powder.

Derivation: Obtained as such in nature as an iron ore.

Grades: Depending on content of iron oxide (75 per cent.)

Containers: Wooden barrels.

Uses: Pigment; polishing compound.

Fire hazard: None.

Railroad shipping regulations: None.

Indian Saffron. See *Curcuma*.

Indian Shot. See *Canna*.

Indian Tobacco. See *Lobelia*.

Indian Turmeric. See *Hydrastis*.

Indigo* (Natural indigo blue).

Color and properties: Dark-blue, odorless, tasteless powder.

Soluble in concentrated sulfuric acid.

Derivation: By fermentation of the cut twigs and leaves of various species of indigofera with water to decompose the glucoside, indican. The solution is oxidized to precipitate the indigo.

Grades: Technical; pure.

Containers: Barrels; tins.

Uses: Textile dyeing and printing; inks.

Fire hazard: None.

Railroad shipping regulations: None.

Indigo Blue. See Indigotin.

Indigo Carmine* (Soluble indigo; Indigo extract; Sodium indigotindisulfonate; Sodium coeruleinsulfate)

$C_{16}H_8N_2O_2(SO_3Na)_2$.

Color and properties: Blue powder or pasty mass.

Soluble in water.

Derivation: Indigotindisulfonic acid is treated with soda.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Indigo Extract. See Indigo carmine.

Indigo, Soluble. See Indigo carmine.

Indigo, Synthetic. See Indigotin.

Indigotin* (Synthetic indigo blue)

$C_{16}H_{10}N_2O_2$.

Color and properties: Dark-blue, crystalline powder; bronze lustre.

Constants: Specific gravity 1.35; melting-point: Sublimes at 300°C.; boiling-point 390°C.

Soluble in aniline, nitrobenzene, chloroform, glacial acetic acid and concentrated sulfuric acid; insoluble in water and alcohol.

Derivation: (a) By fusing phenylglycoll-ortho-carboxylic acid with alkali. (b) From anthranilic acid.

Grades: Technical; pure.

Containers: Wood kegs.

Uses: Dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Indium In.

Color and properties: Ductile, shiny, silver-white metal; softer than lead.

Constants: Specific gravity 7.362; melting-point 155°C.; boiling-point 700°C.

Soluble in acids.

Derivation: By the reduction of indium oxide.

Grades: Technical.

Containers: Boxes; glass bottles.

Uses: Indium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Indoform* (Salicylic acid methylene acetate).

Color and properties: White powder; acid, astringent taste.

Constants: Melting-point 108-109°C.

Soluble in hot water; very slightly soluble in cold water.

Derivation: By the action of formaldehyde on acetylsalicylic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Indole* (Ketole) $C_8H_7(CH.NH)CH$.

Color and properties: Colorless to yellowish scales; intense fecal odor.

Constants: Melting-point 52°C.; boiling-point 254°C.

Soluble in alcohol, ether and hot water.

Derivation: By heating ortho-nitro-

cinnamic acid with potassium hydroxide and iron filings.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Chemical reagent; perfumery; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Infusa, U. S. P. Infusions.

Infusorial Earth. See Kieselerde.

Infusum Alstoniae, B. P. Infusion of alstonia.

Infusum Aurantii, B. P. Infusion of orange peel.

Infusum Aurantii Compositum, B. P. Compound infusion of orange peel.

Infusum Buchu, B. P. Infusion of buchu.

Infusum Calumbae, B. P. Infusion of calumba.

Infusum Caryophylli, B. P. Infusion of cloves.

Infusum Cascarillae, B. P. Infusion of cascarilla.

Infusum Chiratae, B. P. Infusion of chiretta.

Infusum Cinchonae Acidum, B. P. Acid infusion of cinchona bark.

Infusum Digitalis, U. S. P., B. P. Infusion of digitalis.

Infusum Ergotae, B. P. Infusion of ergot.

Infusum Gentianae Compositum, B. P. Compound infusion of gentian.

Infusum Krameriae, B. P. Infusion of krameria.

Infusum Quassiae, B. P. Infusion of quassia.

Infusum Rhei, B. P. Infusion of rhubarb.

Infusum Rosae Acidum, B. P. Acid infusion of roses.

Infusum Scopari, B. P. Infusion of broom.

Infusum Senegae, B. P. Infusion of senega.

Infusum Sennae, B. P. Infusion of senna.

Infusum Sennae Compositum, U. S. P., B. P. Compound infusion of senna.

Infusum Uvae Ursi, B. P. Infusion of bear-berry.

Injectio Apomorphinae Hypodermica, B. P. Hypodermic injection of apomorphine.

Injectio Cocainae Hypodermica, B. P. Hypodermic injection of cocaine.

Injectio Ergotae Hypodermica, B. P. Hypodermic injection of ergot.

Injectio Morphinae Hypodermica, B. P. Hypodermic injection of morphine.

Injectio Strychninae Hypodermica, B. P. Hypodermic injection of strychnine.

Insane Root. See Hyoscyamus.

Insect Powder. See Pyrethrum flowers.

Insect Wax. See Chinese wax.

Inula* (Scab-wort, Elf-wort, Horse-heal, Helenium).
Derivation: Root of *Inula helenium*.

Habitat: Central Asia, Europe and U. S.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Inula Camphor. See Helenin.

Inulin* (Alant starch).

Color and properties: Horny, colorless, amorphous lumps or white powder.

Soluble in hot water.

Derivation: A carbohydrate from the bulbs of *Dahlia variabilis*.

Grades: Technical.

Containers: Wooden barrels.

Uses: Diabetic bread; manufacture of fructose.

Fire hazard: None.

Railroad shipping regulations: None.

Invar. See Ferro-nickel.

Invertase. See Invertin.

Invertin* (Invertin zymase, Invertase).

Color and properties: Whitish, pulverulent enzyme.

Soluble in water.

Derivation: From yeasts of the *saccharomyces* species.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Converting sucrose into dextrose and levulose.

Fire hazard: None.

Railroad shipping regulations: None.

Iodeosine* (Tetraiodofluorescein)

$C_{20}H_8I_4O_5$.

Color and properties: Red powder.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of fluorescein and iodine in presence of iodic acid.

Grades: Technical.

Containers: Glass bottles.

Uses: Indicator in analytic chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Iodethylene. See Diiodoform.

Iodic Acid. See Acid iodic.

Iodine* I_2 .

Color and properties: Purplish-black flat, volatile crystals; poisonous; corrosive.

Constants: Specific gravity 4.98; melting-point 114.2°C .; boiling-point 184°C . Soluble in alcohol, carbon bisulfide, chloroform, ether, glycerine and alkaline iodide solutions; insoluble in water.

Derivation: From the ashes of seaweeds or mother liquors of Chili saltpeter by the addition of sodium bisulfite solution. The precipitated iodine is collected and dried.

Method of purification: Sublimation.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles; tins.

Uses: Medicine; organic compounds; dyestuffs; iodides; iodates; tincture of iodine.

Fire hazard: None.

Railroad shipping regulations: None.

Iodine Bromide. See Iodine monobromide, pentabromide and tribromide.

Iodine Chloride. See Iodine monochloride and trichloride.

Iodine Cyanide* (Cyanogen iodide) ICN.

Color and properties: Colorless needles; very pungent odor; acid taste; violent poison.

Constants: Melting-point 146.5°C .

Soluble in water, alcohol and ether.

Derivation: By heating a metal cyanide with iodine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Taxidermists' preservative.

Fire hazard: None.

Railroad shipping regulations: None.

Iodine Monobromide* (Bromine iodide) IBr.

Color and properties: Crystalline, purplish-black mass.

Constants: Melting-point 36°C .

Soluble in water.

Derivation: By the interaction of iodine and bromine.

Grades: Technical.

Containers: Glass bottles; metal boxes.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Iodine Monochloride* ICl.

Color and properties: Reddish-brown, oily liquid.

Constants: Melting-point 25°C .; boiling-point 101°C .

Soluble in alcohol and dilute hydrochloric acid.

Derivation: By the action of dry chlorine on iodine.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: Red label.

Iodine Pentabromide* IBr_5 .

Color and properties: Brown liquid.

Soluble in water.

Derivation: By the interaction of bromine and iodine.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Iodine Tincture, U. S. P. A solution of iodine and potassium iodide in alcohol.

Iodine Tincture, Colorless. A solution of iodine and potassium iodide in an aqueous solution of sodium thiosulfate.

Iodine Tribromide* IBr_3 .

Color and properties: Brown liquid.

Soluble in alcohol.

Derivation: By the interaction of iodine and bromine.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Iodine Trichloride* ICl_3 .

Color and properties: Orange-yellow, deliquescent, crystalline powder; pungent, irritating odor; poisonous.

Constants: Melting-point 33°C .

Soluble in water, alcohol and benzol.

Derivation: By interaction of iodine and chlorine.

Grades: Technical.

Containers: Amber glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Iodistol. See Thymol iodide.

Iodized Oil.* Almond oil, containing dissolved iodine, used for linimental purposes in medicine.

Iodoethylene. See Diiodoform.

Iodoform* (Triiodomethane; Methenyl triiodide; Formyl triiodide).

Color and properties: Small, yellow crystals; characteristic, penetrating odor.

Constants: Specific gravity 4.08; melting-point 119°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By heating, acetone or methyl alcohol with iodine in presence of an alkali or alkaline carbonate. (b) Electrolytically, by passing a current through a solution containing potassium iodide, methyl alcohol and sodium carbonate.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Iodoformum, U. S. P., B. P. See Iodoform.

Iodohydromol. See Thymol iodide

Iodomethane. See Methyl iodide.

Iodosol. See Thymol iodide.

Iodotannic Acid. See Acid iodotannic.

Iodotannin. See Acid iodotannic.

Iodothymol. See Thymol iodide.

Iodum, U. S. P., B. P. See Iodine.

Iodyrite. Natural silver iodide, AgI . Contains 46 per cent silver. New Mexico.

Iolite. See Cordierite.

Iosol. See Thymol iodide.

Iothymol. See Thymol iodide.

Ipado. See Coca.

Ipecac* (*Ipecacuanha hippo*).

Derivation: Dried root of *Cephaelis ipecacuanha*.

Habitat: Brazil and Bolivia; cultivated in India.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ipecacuanha, U. S. P. See Ipecac.

Ipecacuanhae Radix, B. P. See Ipecac.

Ipomoeae Radix, B. P. *Orizaba jalap* (Mexican scammony root).

Iridium* Ir.

Color and properties: Silvery, ductile metal.

Constants: Specific gravity: (a) White spongy, 15.86; (b) Crystalline, 22.42. Melting-point: (a) White spongy, 2250°C .; (b) Crystalline, 1950°C .

(a) Soluble in acids. (b) Insoluble in aqua regia and other acids.

Derivation: Separated from platinum by dissolving native platinum or its ores in aqua regia, iridium being insoluble.

Impurities: Palladium; platinum; osmium.

Grades: Technical.

Containers: Boxes.

Uses: Alloys; points on gold pens.

Fire hazard: None.

Railroad shipping regulations: None.

Iridosmine. A natural alloy of iridium and osmium. Analyses show 43 to 77 per cent of iridium, 17 to 49 per cent osmium, and a little rhodium, ruthenium, platinum, iron and copper. Washington.

Irish Moss* (*Chondrus crispus*).

Derivation: A kelp found along coast of Ireland and New England.

Grades: Technical.

Containers: Burlap bags.

Uses: Medicine; leather dressing.

Fire hazard: None.

Railroad shipping regulations: None.

Iron and Steel* (Ferrum) Fe.

Color and properties: Silvery-white, tenacious, lustrous, malleable, ductile metal, rarely found native except in basalts and meteorites. The only metal which can be tempered, i. e., hardened by heating and sudden cooling; heating and slow cooling make it very pliable. It is magnetic and can be magnetized, but soon loses its magnetism (steel retains it). It rapidly oxidizes (rusts) in damp or salty air. Water is decomposed by iron at all temperatures from 0° to 100°C., yielding hydrogen. It is very brittle at very low temperatures, softens at red-heat, can be welded at white-heat and becomes brittle above white heat.

Constants: (a) Pure iron: Specific gravity 7.85-7.88; melting-point 1530°C.; boiling-point 2450°C. (b) Wrought-iron: Specific gravity 7.80; melting-point 1600°C. (c) White pig-iron: Specific gravity 7.58-7.73; melting-point 1075°C. (d) Gray pig-iron: Specific gravity 7.03-7.13; melting-point 1275°C. (e) Steel: Specific gravity 7.60-7.80; melting-point 1375°C.

Soluble in dilute acids; insoluble in water, alcohol, ether and alkalis.

Derivation: By smelting the ores (oxides, carbonates or sulfides) (Brown iron ore, Hematite, Ilmenite, Limonite, Magnetite, Marcasite, Pisanite,

Pyrite, Pyrrhotite, Siderite, Specularite) with carbon (coke, charcoal or coal) in blast or electric furnaces, yielding iron with combined and free carbon in solution. The proportion and condition of the carbon and amount of dissolved slag determine the properties of the resulting metal and yield cast-iron, wrought-iron or steel. The iron is run into moulds ("sows") or sent in molten condition in ladles to the steel plants. The crude (cast) iron is converted into wrought-iron by burning out the carbon, silicon, manganese, phosphorus and sulfur present in reverberatory furnaces. Steel is produced (a) by bessemerizing (oxidizing by means of an air-blast in a "converter"); (b) by the open-hearth process (smelting in a regenerative-reverberatory furnace); (c) by the crucible process in which the best quality wrought-iron is melted in graphite or clay crucibles with charcoal; (d) By the cementation processes in which bars of wrought-iron are kept at yellow heat for a long time in long fire-brick chests in which the iron is imbedded in charcoal. The Bessemer and open-hearth processes produce mild (low carbon) steel. The crucible and cementation processes produce the best steel, free from slag.

Grades: Cast-iron, gray and white (pig-iron); wrought-iron; mild steel; puddled steel; blister steel; weld steel; ingot steel; alloy steels; spiegeleisen; silico-spiegel.

Uses: Alloy steels:

Nickel steel: great tensile strength, hardness, high limit of elasticity and great ductility. For war-ship armor, etc.

Manganese steel: Very hard and tough. For rock-crushing machinery, safes, car-wheels, etc.

Chrome steel: Great hardness and high elastic limit. For armor-piercing shells, projectiles, shoes and dies of stamp-mills, safes, etc.

Vanadium steel: For making equipment which must resist great strains and shocks.

Tungsten steel: For making magnets.

- Chrome-tungsten (high-speed) steel: Retains its hardness when heated to 600°C. by the friction of the work performed. For lathe tools for cutting iron and other metals and hard substances.
Iron filings and powder all used as concrete hardeners and as reducing agents.
Fire hazard: None.
Railroad shipping regulations: None.
- Iron Acetate.** See Ferric acetate.
- Iron Acetate, Basic.** See Ferric acetate, Basic.
- Iron Acetate Liquor.***
Derivation: By the action of pyroligneous acid on iron filings.
Grades: Technical; 25°Tw.
Containers: Wooden barrels.
Uses: Textile industries; mordanting.
Fire hazard: None.
Railroad shipping regulations: None
- Iron Albuminate.** See Ferric albuminate.
- Iron Alum.** See Ferric-potassium sulfate.
- Iron-Ammonium Citrate.** See Ferric-ammonium citrate.
- Iron-Ammonium Oxalate.** See Ferric-ammonium oxalate.
- Iron-Ammonium Sulfate.** See Ferric-ammonium sulfate.
- Iron Arsenate.** See Ferrous arsenate.
- Iron Benzoate.** See Ferric benzoate.
- Iron Bromide.** See Ferric bromide and Ferrous bromide.
- Iron Buff* (Nankin yellow)** Ferric hydroxide dyed on cotton or cotton goods by steeping the latter in a solution of ferrous sulfate, basic ferric sulfate or ferric nitrate and precipitating the hydroxide on the fiber by means of calcium hydroxide solution, sodium hydroxide solution or soda-ash.
- Iron Carbonate.** See Ferrous carbonate.
- Iron Carbonate, Precipitated.** See Ferric oxide, Brown.
- Iron Chloride.** See Ferric chloride and ferrous chloride.
- Iron Citrate.** See Ferric citrate.
- Iron "Cyanide."** See Ferric ferrocyanide.
- Iron Dichloride.** See Ferrous chloride.
- Iron Dichromate.** See Ferric bichromate.
- Iron Ethiops.** See Ferric oxide, Black.
- Iron Ferrocyanide.** See Ferric ferrocyanide.
- Iron Fluoride.** See Ferrous fluoride.
- Iron Gallotannate.** See Ferric tannate.
- Iron Glycerinophosphate.** See Iron Glycerophosphate.
- Iron Glycerophosphate* (Iron glycerinophosphate).**
Derivation: By the interaction of a soluble ferric salt and glycerphosphoric acid.
Color and properties: Yellowish scales. Soluble in water, alcohol and sirups.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.
- Iron Hydroxide.** See Ferric hydroxide.
- Iron Iodide.** See Ferrous iodide.
- Iron Liquor.** See Iron acetate liquor.

Iron Malate. See Ferric malate.

Iron Monosulfide. See Ferrous sulfide.

Iron Oleate. See Ferric oleate.

Iron Oxalate. See Ferrous oxalate.

Iron Oxide, Black. See Ferric oxide, Black.

Iron Oxide, Brown. See Ferric oxide, Brown.

Iron Oxide, Hydrated. See Ferric hydroxide.

Iron Oxide Magnetic. See Ferric oxide, Black.

Iron Oxide, Red. See Ferric oxide, Red.

Iron Oxide, Yellow* (Umber; Sienna).
Derivation: Natural mineral product, varying from bright yellow to brown.
Grades: Based on covering properties and iron oxide content.
Containers: Wooden barrels.
Uses: Pigments.
Fire hazard: None.
Railroad shipping regulations: None.

Iron Perchloride. See Ferric chloride.

Iron Peroxide, Hydrous. See Ferric hydroxide.

Iron Persulfate. See Ferric sulfate, Basic.

Iron Phosphate. See Ferric phosphate.

Iron-Potassium Tartrate. See Ferrous-potassium tartrate.

Iron Protocarbonate. See Ferrous Carbonate.

Iron Protochloride. See Ferrous chloride.

Iron Protoiodide. See Ferrous iodide.

Iron Protosulfide. See Ferrous sulfide.

Iron Pyrites (Pyrite; Iron sulfide; Fool's gold). A natural, pale-yellow, crystallized iron disulfide, FeS_2 , containing 46.6 per cent of iron. Found in Canada, Cuba, Virginia, Massachusetts, Spain, etc.
Grades: Technical (Based on sulfur content).
Containers: Freight cars; tramp steamers.
Uses: Manufacturing sulfuric acid and liquid sulfur dioxide; in the sulfite process for making paper pulp.
Fire hazard: None.
Railroad shipping regulations: None.
See also Ferrous sulfide.

Iron Pyrolignite. See Iron acetate liquor.

Iron Pyrophosphate* $\text{Fe}_4(\text{P}_2\text{O}_7)_3$.
Color and properties: White powder.
Soluble in acids and carbonated water.
Derivation: By the addition of a ferric salt to a solution of pyrophosphoric acid.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Iron, Reduced. See Ferrum reductum.

Iron Salts. See Ferric and Ferrous.

Iron Sesquibromide. See Ferric bromide.

Iron Sesquichloride. See Ferric chloride.

Iron Sesquioxide. See Ferric oxide, Red.

Iron Sesquioxide, Hydrated. See Ferric hydroxide.

Iron Sesquisulfate. See Ferric sulfate.

Iron-Sodium Oxalate. See Ferric-sodium oxalate.

Iron Sponge. Iron oxide used for absorbing sulfur in the purification of coal gas.

Iron Stearate. See Ferric stearate.

Iron Subcarbonate. See Ferric oxide, Brown.

Iron Subsulfate. See Ferric sulfate, Basic.

Iron Sulfate. See Ferric sulfate and Ferrous sulfate.

Iron Sulfate Basic. See Ferric sulfate, Basic.

Iron Sulfide. See Ferrous sulfide.

Iron Sulfuret. See Ferrous sulfide.

Iron Tannate. See Ferric tannate.

Iron Tersulfate. See Ferric sulfate.

Iron Tribromide. See Ferric bromide.

Iron Trichloride. See Ferric chloride.

Iron Trioxide. See Ferric oxide, Red.

Iron Vanadate. See Ferric vanadate.

Isatin* (Ortho-aminobenzoylformic acid; Isatic acid, Anhydride; Isatic acid lactime) $C_6H_4CO:C(OH).N$.
Color and properties: Yellowish-red crystals; bitter taste.
Constants: Melting-point $200^{\circ}C$.
Soluble in water, alcohol and ether.
Derivation: From indigo by oxidation.
Grades: Technical.
Containers: Wooden kegs.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Isinglass* (Ichthyocolla, Fish glue).
Derivation: A pure white, odorless, tasteless gelatine prepared from the inner skins of the swimming bladders of fish, usually the sturgeon. Mica is often erroneously called isinglass.

Grades: Technical.
Containers: Boxes.
Uses: Adhesive; clarifying agent.
Fire hazard: None.
Railroad shipping regulations: None.

Isoborneol. See Borneol.

Isobutyl Alcohol* (Isopropylcarbinol) $(CH_3)_2CHCH_2OH$.
Color and properties: Clear, mobile liquid; inflammable.
Constants: Specific gravity 0.806; boiling-point $107^{\circ}C$.
Soluble in water, alcohol and ether.
Derivation: By the fractional distillation of crude fusel oil from potato alcohol.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles; barrels; iron drums.
Uses: Manufacturing fruit essences; organic synthesis.
Fire hazard: Dangerous.
Railroad shipping regulations: Red label.

Isobutyl Aldehyde* (Isobutyryl aldehyde) $(CH_3)_2CH.CHO$.
Color and properties: Transparent, colorless highly refractive liquid; pungent odor.
Constants: Specific gravity 0.797; boiling-point $63^{\circ}-64^{\circ}C$.
Soluble in alcohol; insoluble in water.
Derivation: By oxidizing isobutyl alcohol with chromic acid.
Method of purification: Distillation.
Grades: Technical.
Containers: Glass bottles; iron drums.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Isobutylcarbinol. See Amyl alcohol.

Isobutylcarboxyl. See Acid valeric, Iso.

Isobutyryl Aldehyde. See Isobutyl aldehyde.

Isocaproic Acid. See Acid butylacetic.

Isocyanuric Acid. See Acid cyanuric.

Isohexoic Acid. See Acid butylacetic.

Isonandra Gutta. See Gutta-percha.

Isopropyl Alcohol* $\text{CH}_3\text{CHOHCH}_3$.
Color and properties: Colorless, clear, mobile liquid; inflammable.
Constants: Specific gravity 0.80; boiling-point 82.8°C .

Soluble in water, alcohol and ether.
Derivation: (a) By the reduction of acetone with sodium amalgam. (b) By treatment of propylene in oil gas with sulfuric acid and hydrolyzing.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Iron drums; barrels; glass bottles.

Uses: Organic synthesis; medicine, manufacture of acetone.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Isopropylbenzene. See Cumene.

Isopropylbenzoi. See Cumene.

Isopropylcarbinol. See Isobutyl alcohol.

Isopropyl-meta-cresol. See Thymol.

Isopropyltoluene. See Cymene.

Isopropyltoluol. See Cymene.

Isotartaric Acid. See Acid meta-tartaric.

Isovaleral. See Isovaleric aldehyde.

Isovaleric Aldehyde* (Isovaleral)

$(\text{CH}_3)_2\text{CHCH}_2\text{CHO}$.

Color and properties: Colorless liquid; apple-like odor.

Constants: Specific gravity 0.804; boiling-point 92°C .

Soluble in alcohol and ether.

Derivation: By the oxidation of amyl acetate or the distillation of isovalerates.

Method of purification: Distillation.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Flavoring compounds; perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Isoxylene. See Xylol, Meta-.

Isoxylol. See Xylol, Meta-.

Ispaghula.

Derivation: Dried seeds of *Plantago ovata*.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Itrol. Silver citrate.

Iva Oil.

Color and properties: Bluish-green liquid oil; aromatic odor.

Constants: Specific gravity 0.934.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the flowering herb of *Achillea moschata*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Preparation of Swiss iva liqueur.

Fire hazard: None.

Railroad shipping regulations: None.

Ivory Black.*

Derivation: By heating the refuse from ivory working in closed retorts until all of the organic constituents are decomposed. The charred mass is ground very fine.

Grades: Technical.

Containers: Boxes; barrels.

Uses: Decolorizing agent; filtering medium.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Ivy, Climbing. See *Rhus toxicodendron*.

Ivy, Poison. See *Rhus toxicodendron*.

Ivy, Three-leaved. See *Rhus toxicodendron*.

J

Jaborandi. See *Pilocarpus*.

Jaborandi Oil.

Color and properties: Bright yellow liquid; penetrating odor.

Chief known constituents: *Pilocarpene*; ketones.

Constants: Specific gravity 0.865-0.895; boiling-point 180°-290°C; optical rotation +3° 25'.

Soluble in alcohol and ether.

Derivation: Distilled from the leaves of *Pilocarpus pennatifolius*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; hair tonics.

Fire hazard: None.

Railroad shipping regulations: None.

Jack. See *Sphalerite*.

Jacquemart's Reagent. For ethyl alcohol. An aqueous solution of mercuric nitrate with nitric acid. On heating the liquid with the reagent, the mercury salt is partially reduced and if ethyl alcohol is present, yields a black precipitate on the addition of ammonia water. Methyl alcohol does not produce this reaction.

Jade (*Jadeite*, *Nephrite*). A hard and extremely tough material of varying composition, greenish white to deep green in color, used in making ornaments. Part of the so-called jade is *jadeite*, a variety of pyroxene, essentially a meta-silicate of sodium and aluminum. Part is *nephrite*, a variety of amphibole, and essentially a meta-silicate of iron, lime and magnesium; and part is a variety of *saussurite*, which is commonly a complex alteration product of plagioclase feldspar. *Williamsite*, a variety of serpentine, is sometimes mistaken for jade. Massachusetts, China and Philippine Islands

"Jaggary" Sugar. A low grade crude sugar produced in India from the date palm.

Jalap.

Derivation: Dried tuberous root of *Exogonum purga*.

Habitat: Mexico; cultivated in India.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Jalap, Orizaba (Mexican scammony root).

Derivation: Dried root of *Ipomœa orizabensis*.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Jalapa, U. S. P., B. P. See *Jalap*.

Jalapæ Resina, B. P. *Jalap resin*.

Jamaica Pepper. See *Pimenta*, page 507.

James' Febrile Powder. Calcium phosphate, Antimoniated.

Jamesonite (Feather ore). A natural sulfide of lead and antimony, $Pb_2Sb_2S_5$. Arizona, Nevada and South Dakota.

Jamestown Weed. See *Stramonium*.

Japaconitine. See *Aconite*.

Japan*

Derivation: A lacquer or varnish prepared by heating linseed oil with litharge and Prussian blue and thinning down the mixture with a solvent (naphtha, turpentine, etc.).

Grades: Technical.

Containers: Tin cans.

Uses: Lacquer for metal and wood; patent leather.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Japan Camphor. See *Camphor*.

Japan Lacquer. See *Japan*.

Japan Wax.

Derivation: From a species of *Rhus* by boiling the fruit in water.

Color and properties: A pale-yellow solid wax.

Constants: Specific gravity 0.970-0.980; melting-point 53° C.

Soluble in benzol and naphtha.

Grades: Technical.

Containers: Wooden boxes.

Uses: Candles; wax matches; furniture polish; leather dressing.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Japanese Belladonna. See *Scopola*.

Japanese Gelatine. See *Agar-agar*.

Jasmine. Oil.

Color and properties: Colorless, light yellow oil; characteristic odor.

Chief known constituents: Benzyl acetate, linalyl acetate, linalol and indol.

Constants: Specific gravity 1.007-1.018; optical rotation +25° to 35°.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled or extracted from the flowers of *Jasminum grandiflorum*.

Grades: Technical.

Containers: Glass bottles; copper flasks.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Jasmine, Yellow. See *Gelsenium*, page 505.

Jateorhiza. See *Calumba*.

Jaulingite. A mineral resin from a variety of lignite; very inflammable.

Jaune Brilliant. See *Cadmium sulfide*.

Jaune D'or. *Martius yellow*.

Java Pepper. See *Cubeba*.

Javelle Water* (*Eau de Javelle*).

Derivation: A solution of sodium hypochlorite, prepared by adding soda ash to a solution of calcium hypochlorite.

Containers: Glass bottles.

Grades: Technical.

Uses: Bleaching agent; disinfectant.

Fire hazard: None.

Railroad shipping regulations: None.

Jaw Oil. See *Black-fish oil*.

"Jellitac." A prepared starch-gluten sold in powder form, and forming an adhesive paste when stirred with cold water.

Jelutong. See *Gum pontianak*.

Jeppel's Oil. See *Bone oil*.

Jesuits' Balsam. See *Copaiba*.

Jesuits' Bark. See *Cinchona bark*, *Calisaya*.

Jet. A dense black lignite, taking a good polish. Sometimes used for jewelry. (Colorado)

Jews' Pitch. See *Asphalt*.

Jimson Weed. See *Stramenium*.

Jimpson Weed. See *Stramonium*.

Josephinite. A natural iron-nickel alloy, Fe_2Ni_5 . Oregon.

Judean Pitch. See *Asphalt*.

Juniper. See *Juniperus*.

Juniper-berry Oil.*

Color and properties: A colorless or faintly greenish-yellow liquid; becomes darker and thicker with age and exposure to air; characteristic odor.

Chief known constituents: Pinene; cadinene; juniper camphor.

Constants: Specific gravity 0.865-0.882; optical rotation -11 to -15; refractive index 1.474-1.488.

Soluble in alcohol, ether and carbon bisulfide.

Derivation: Distilled from the fruit of *Juniperus communis*.

Method of purification: Rectification.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Medicine; preparation of gin and liqueurs.
 Fire hazard: None.
 Railroad shipping regulations: None.

Juniperus* (Juniper).

Derivation: Berries, wood and tops of *Juniperus communis*.
 Habitat: Northern Europe, Asia and North America.
 Grades: Technical.
 Containers: Bags.

Uses: Medicine: gin; cordials; fumigating.
 Fire hazard: None.
 Railroad shipping regulations: None.

Jute.

Derivation: The bast fiber of several species of *Corchorus* of which *C. capsularis* is the most important.
 Habitat: India.
 Grades: Technical.
 Containers: Bales.
 Uses: Bags; twine.
 Fire hazard: None.
 Railroad shipping regulations: None.

K

Kainite.

Derivation: A mineral found in the Stassfurt deposits containing potassium sulfate, magnesium sulfate and magnesium chloride.

Grades: Based on potash content.
 Containers: Bags.
 Uses: Potash; magnesium; fertilizers.
 Fire hazard: None.
 Railroad shipping regulations: None.

Kakodylic Acid. See Acid cacodylic.

Kaladana (Pharbitis seeds).

Derivation: Dried seeds of *Ipomoea hederacea*.
 Grades: Technical; B. P.
 Containers: Bags.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Kaladana Resin (Pharbitisin).

Derivation: A mixture of resins obtained from Kaladana.
 Grades: Technical; B. P.
 Containers: Bags.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Kaladana Resinæ, B. P. See Kaladana resin.

Kalinite (Potash alum). Natural hydrous aluminum-potassium sulfate, $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$. California and Nevada.

Kaolin (Terra alba; White bole; Kaolinite; China clay; Bolus alba; Argilla; Porcelain clay)
 $Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$.

Color and properties: A white clay, mainly hydrous aluminum silicate, from which porcelain may be made. Alabama, Arizona, Arkansas, California, Colorado, Delaware, Georgia, Indiana, Minnesota, Missouri, Nevada, Pennsylvania, Virginia, Wisconsin and Wyoming.

Insoluble in water and dilute acids.

Derivation: Quarried.

Grades: Technical; B. P.

Containers: Barrels; boxes.

Uses: Ceramics; pigments; pencil manufacture, for mixing with graphite; filler for paper and textiles.

Fire hazard: None.

Railroad shipping regulations: None.

Kaolin Cataplasma* (Antiphlogistine, Denver mud).

Derivation: By the mixing of the following ingredients: Kaolin 577 parts; Boric acid 45 parts; Thymol 0.5 parts;

Methyl salicylate 2 parts; Peppermint oil 0.5 parts; Glycerine 375 parts.
Grades: Technical; U. S. P.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Kaolinite. See Kaolin.

Kaolinum, B. P. See Kaolin.

Kapoc Oil. See Kapok oil.

Kapok Oil (Kapoc oil)

Derivation: By pressing the seeds of *Eriodendron anfractuosum* and *Bombax ceila*.

Habitat: The tropics.

Color and properties: Yellowish-green oil; pleasant odor and taste.

Constants: Specific gravity 0.9235; saponification number 181-205; iodine value 117-129.

Soluble in alcohol, ether and chloroform.

Grades: Technical.

Containers: Barrels.

Uses: Edible oil; soap stock.

Fire hazard: None.

Railroad shipping regulations: None.

Katchung Oil. See Peanut oil.

Kauri. See Gum Kauri.

Kaurie. See Copal.

Kautschin. See Dipentene.

Kava.

Derivation. The peeled, dried and divided rhizome of *Piper methysticum*.

Grades: Technical; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Kava Rhizoma, B. P. See Kava.

Kelene. See Ethyl chloride.

Keene's Cement. Produced by calcining

gypsum or by partially calcining lump gypsum, soaking the lumps in a solution of alum or aluminum sulfate, recalcining and grinding. Used as a building material.

Kelp.

Derivation: Large, coarse seaweed.

Uses: Production of iodine, potash, acetone and other solvents.

Kerite, Artificial caoutchouc.

Kermes Mineral. See Antimony sulfide.

Kerosene* (Astral oil, Coal oil, sometimes called Paraffin oil).

Color and properties: A white, mobile liquid consisting of a mixture of hydrocarbons; free of gasoline, naphtha and heavy oils.

Constants: Specific gravity: About 0.760-0.860; boiling-point: About 150°-300°C.

Derivation: By fractional distillation from petroleum.

Grades: 43°-66°C. flash-point, water-white.

Containers: Steel drums; tin cans; tank cars; tank ships.

Uses: Fuel; illuminant.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Kesso Oil. See Valerian oil, Japanese.

Ketole. See Indole.

Ketone, Ethylmethyl. See Methyl ethylketone.

Ketone, Michler's. See Tetramethyldiaminobenzophenone.

Ketopropane. See Acetone.

Kidney Liverleaf. See Liverwort.

Kieselgur (Kieselguhr, Guhr, Infusorial earth, Siliceous earth, Diatomaceous earth, Fossil flour, Tripolite).

Color and properties: White powder or lumps, capable of taking up and holding four times its weight of water. Alabama, California, Colorado, Delaware, Florida, Maryland,

Maine, Massachusetts, Nebraska, Nevada, New Hampshire, New York, Oregon, South Carolina, South Dakota, Utah, Vermont, Virginia and Washington.

Insoluble in acids and water.

Derivation: A soft, white, earthy rock composed of the siliceous skeletons of small aquatic plants called diatoms.

Grades: Technical; U. S. P.

Containers: Bags; barrels.

Uses: Dynamite absorbent; packing for inflammable or caustic substances; heat insulation; filtering medium; ceramics; abrasive soaps; medicine; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Kieserite. A natural magnesium sulfate, $\text{MgSO}_4 \cdot \text{H}_2\text{O}$, occurring in the Stassfurt salt beds.

Killeen. See Chondrus.

King's Yellow. See Arsenic sulfide, Yellow.

Kinic Acid. See Acid quinic.

Kino (Resin kino; Gum kino).

Derivation: Inspissated juice of *Pterocarpus marsupium*.

Habitat: Western Africa, East India, Ceylon and Bengal.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; textile industry; tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Kish. See Graphite.

Kittool Fiber.

Derivation: From the leaves of a species of palm from Ceylon.

Grades: Technical.

Containers: Bags.

Uses: Brush manufacture.

Fire hazard: None.

Railroad shipping regulations: None.

Kleinenberg's Fat Mixture. A solution

of cacao-butter and spermaceti in castor oil, used as an imbedding material in microscopy.

Kleinite. A natural mercury ammonium chloride of uncertain formula. Texas.

Klein's Reagent.

Derivation: A saturated solution of cadmium borotungstate.

$2(\text{Cd}_2\text{H}_2\text{W}_8\text{O}_{27}) \cdot 7(\text{WO}_3) \cdot \text{B}_2\text{O}_3 \cdot \text{H}_2\text{O}$.

Specific gravity 3.28.

Uses: For the separation of minerals by specific gravity.

"Klucine." A proprietary waterproofing compound.

Kola. See Cola.

Kola Nuts. See Cola.

Kool. Mat bags, used in Russia for packing linseed for export.

Kooringa Fiber. A substitute for flax, prepared in Tanjore.

"Koreon." A proprietary brand of basic chromium sulfate, $\text{Cr}(\text{OH})\text{SO}_4$, used in the tanning industry.

Kousso (Cusso; Brayera).

Derivation: Female inflorescence of *Hagenia abyssinica*.

Habitat: Abyssinia.

Grades: Technical; U. S. P.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Krameria (Rhatany; Payta).

Derivation: Dried root of *Krameria triandra* and *Krameria argentea*.

Habitat: Peru; Bolivia and Brazil.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Krennerite. A natural telluride of gold and silver of variable composition,

(AuAg) Te_2 . At Cripple Creek, analysis gives gold 43.86 per cent, silver 0.46 per cent, tellurium 55.68 per cent. Colorado.

Kresalol, Meta-. Cresalol, Meta-

Kresalol, Ortho-. Cresalol, Ortho-

Kresalol, Para-. Cresalol, Para-

Kresote. See Creosotes.

Kresol. See Cresol.

Kresotic Acid. See Acid cresotic.

Kryolith. See Cryolite.

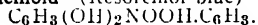
L

Labradorite. A lime-soda feldspar. See Feldspar and Moonstone.

Lac. See Shellac.

Lacca. See Shellac.

Lacmoid* (Resorcinol blue)



Color and properties. Lustrous, dark-violet, crystalline scales.

Soluble in alcohol, ether, acetone, phenol and glacial acetic acid; slightly soluble in water.

Derivation: From resorcinol by treatment with sodium nitrite.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Indicator in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Lacmus. See Litmus.

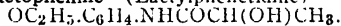
Lac Sulphuris. See Sulfur.

Lactic Acid. See Acid lactic.

Lactoglucose. See Galactose.

Lactone of Cantharidic Acid. See Cantharidin.

Lactophenine* (Lactylphenetidine)



Color and properties: White, crystalline powder.

Constants: Melting-point 118°C .

Soluble in water; slightly soluble in alcohol.

Derivation: By the action of lactic acid on phenetidine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lactose. See Milk sugar.

Lactylphenetidine. See Lactophenine.

Ladanum Oil.

Color and properties: A golden-yellow, essential oil; fine, ambergris odor. A crystalline body separates on standing.

Constants: Specific gravity 1.011.

Soluble in alcohol, ether and chloroform.

Derivation: By distillation of the gum resin of *Cistus creticus*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Lady's Slipper. See *Cypripedium*.

Lakes.* A class of pigments which are indefinite compounds of metallic salts with organic chromophoric compounds.

Derivation: By precipitation of a mineral pigment such as barium sulfate, alumina, etc., in a solution of a dye-stuff. The precipitate is washed, filtered, dried and finely ground.

Grades: Based on color and tinctorial value.

Containers: Wooden kegs.

Uses: Paint pigments; lithographic and printing inks.

Fire hazard: None.

Railroad shipping regulations: None

Lampblack.*

Derivation: From natural gas or oils by burning under plates or rollers.

Grades: According to coloring properties.

Containers: Barrels.

Uses: Paint; inks; rubber

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Lanain. See Lanum.

Lanalin. See Lanum.

Lanesin. See Lanum.

Lanichol. See Lanum.

Laniol. See Lanum.

Lanolin. See Lanum.

Lanthanite, Artificial. See Lanthanum carbonate.

Lanthanum.* La.

Color and properties: White, malleable, ductile metal; oxidizes rapidly in air.

Constants: Specific gravity 6.154; melting-point 810°C.

Soluble in acids.

Derivation: By electrolysis of lanthanum chloride.

Grades: Technical.

Containers: Boxes.

Uses: Lanthanum salts.

Fire hazard: None

Railroad shipping regulations: None.

Lanthanum Carbonate* (Artificial lanthanite) $\text{La}_2(\text{CO}_3)_3 \cdot 3\text{H}_2\text{O}$.

Color and properties: White, crystalline powder.

Soluble in acids; insoluble in water.

Derivation: By adding sodium carbonate to a solution of lanthanum nitrate.

Grades: Technical.

Containers: Boxes.

Uses: Incandescent gas mantles.

Fire hazard: None

Railroad shipping regulations: None.

Lanthanum Oxide* (Lanthanum trioxide; Lanthanum sesquioxide) La_2O_3 .

Color and properties: White, amorphous powder.

Soluble in acids; insoluble in water.

Derivation: By extraction from monazite sand.

Grades: Technical

Containers: Boxes.

Uses: Instead of lime in calcium lights; incandescent gas mantles.

Fire hazard: None.

Railroad shipping regulations: None.

Lanthanum Sesquioxide. See Lanthanum oxide.

Lanthanum Trioxide. See Lanthanum oxide.

Lanum* (Lanolin, Lanalin, Lanain, Lanesin, Laniol, Lanichol).

Derivation: Purified wool grease.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden barrels; tins.

Uses: Medicine; pharmacy; cosmetics.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Lapis Calaminaris. See Calamine.

Lapis Lazuli.

Derivation: A translucent, rich, Berlin-blue, azure-blue, violet-blue, or greenish blue stone. It is a mixture of la-

zurite, hauynite and other blue minerals. California.

Uses: Ornaments; jewelry; pigment (ultramarine).

Lapis Smiridis. See Emery.

Lappa* (Clotbur; Bardana; Burdock)

Derivation: Dried root of *Arctium lappa* and some other species of *Arctium*, from plants of the first year's growth.

Grades: Technical; U. S. P.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Larch Extract.*

Derivation: By leaching the bark of the *Pinus larix*.

Grades: Larch extract, 25 per cent Tannin. Larch crystals, 50 per cent Tannin.

Containers: Extract: Wooden barrels; Crystals: Bags.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Lard Oil.*

Color and properties: Colorless or yellowish oil.

Chief constituents: Olein, with a small percentage of the glycerides of solid fatty acids.

Constants: Specific gravity 0.915; saponification value 195-196; iodine value 56-74.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: By cold pressing lard.

Impurities: Cotton seed; petroleum oils.

Grades: Prime winter edible; Prime winter inedible; off prime; Extra No. 1; No. 1; No. 2.

Containers: Wooden barrels.

Uses: Lubricant; illuminant; metal cutting compounds; oiling wool.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Large Fennel. See Fennel.

Larix Cedrus. See Cedrus.

Larkspur. See Delphinium.

Laudanine* $C_{20}H_{25}NO_4$.

Color and properties: Small prisms; poisonous.

Constants: Melting-point $166^{\circ}C$.

Soluble in benzol and chloroform; slightly soluble in alcohol and ether.

Derivation: By extraction from opium. Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Laudanosine* $C_{21}H_{27}NO_4$.

Color and properties: White needles; poisonous.

Constants: Melting-point $80^{\circ}C$.

Soluble in alcohol, ether and benzol; insoluble in water.

Derivation: From opium.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Laudanum* (Tincture of opium).

Color and properties: Brown liquid; poisonous.

Soluble in alcohol and ether.

Derivation: Granulated opium dissolved in dilute alcohol.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Laughing Gas. See Nitrous oxide.

Laurel. See Laurus.

Laurel Camphor. See Camphor.

Laurene. See Pinene.

Laurel Oil, Volatile* (Bay oil).

Color and properties: A bright yellow liquid; aromatic odor.

Chief known constituents: Cineol; pinene.

Constants: Specific gravity 0.924.

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from the leaves or berries of *Laurus nobilis*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; tins; iron drums.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Laurent's Acid. See Acid nitronaphthalenesulfonic 1:5.

Laurus (Sweet bay; Bay; Noble laurel; Bayberry).

Derivation: Leaves and fruit of *Laurus nobilis*.

Habitat: Mediterranean region; cultivated in Mexico.

Grades: Technical.

Containers: Bags.

Uses: Medicine; source of expressed bay oil.

Fire hazard: None.

Railroad shipping regulations: None.

Lava. A rock that has reached the surface of the earth while molten.

Lavender. See page 505.

Lavender Flower Oil* (*Oleum lavandulae florum*).

Color and properties: A colorless or yellowish liquid; fragrant, lavender odor.

Chief known constituents: Linalool; linaloyl acetate; geraniol; cineol.

Constants: Specific gravity 0.885 to 0.897; optical rotation -5° to -8° .

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from the fresh flowers of *Lavandula officinalis*.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Glass bottles; copper flasks.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Lavender Spike Oil*.

Color and properties: A colorless or

yellowish liquid, less fragrant than the official lavender oil.

Chief known constituents: Pinene; camphene; cineol; linalool; camphor; borneol; geraniol.

Constants: Specific gravity 0.905-0.920; optical rotation 0° to $+3^{\circ}$.

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled from the flowering herb, *Lavandula spica*.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Copper flasks; glass bottles; iron drums.

Uses: Veterinary medicine; liniments.

Fire hazard: None.

Railroad shipping regulations: None.

Lawsonia Alba. See Henna.

Lead* (Plumbum) Pb. A heavy, malleable, ductile, gray, soft metal of small tensile strength, rarely found native. See also Altaite, Anglesite, Brongniardite, Cerussite, Crocoite, Dufrenoy'site, Galena, Jamesonite, Leadhillite, Linarite, Massicot, Mimetite, Minium, Plumbojarosite, Pyromorphite.

Constants: Specific gravity 11.34; melting-point 327°C ; boiling-point 1525°C .

Soluble in nitric acid; insoluble in water.

Derivation: By roasting galena.

Method of purification: Roasting.

Impurities: Zinc; silver; cadmium.

Grades: Technical; sold in pigs, sheets, granules and powder.

Containers: Freight cars.

Uses: Chemical apparatus; water pipes; lead pigments; white lead; storage batteries; lining for acid-proof vessels; piping, valves, etc.; making cables; insulator in electrotechnic apparatus; solder; alloys.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Acetate* (Sugar of lead)

$\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: White crystals (Commercial grades are frequently brown or gray lumps); poisonous.

Constants: Specific gravity 2.50; melting-point: Loses $3\text{H}_2\text{O}$ at 75°C .; boiling-point 280°C .

Soluble in water; insoluble in alcohol. Derivation: By the action of acetic acid on litharge.

Method of purification: Crystallization.

Impurities: Lead carbonate.

Grades: Brown, broken; white, broken; granular; white crystals; U. S. P.; B. P.

Containers: Wooden barrels.

Uses: Medicine; lead salts; dyeing and printing cottons; manufacturing varnishes.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Acetate, Monobasic* (Lead subacetate) $\text{Pb}_2\text{O}(\text{CH}_3\text{COO})_2$.

Color and properties: White powder; poisonous.

Soluble in water, alcohol and acids.

Derivation: By the interaction lead oxide and acetic acid.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Lead salts; analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Acetate, Tribasic* (Tribasic lead acetate) $\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 2\text{PbO} \cdot \text{H}_2\text{O}$.

Color and properties: Lustrous, white, microscopic needles; poisonous.

Soluble in water and alcohol.

Derivation: By the action of acetic acid on lead oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Weighting silk; textile printing.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Antimonate* (Naples yellow)

$\text{Pb}_3(\text{SbO}_4)_2$.

Color and properties: Orange-yellow powder; very poisonous.

Insoluble in water.

Derivation: By the interaction of so-

lutions of lead nitrate and potassium antimonate, concentration and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Paint pigment; staining glass, crockery and porcelain.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Arsenate* $\text{Pb}_3(\text{AsO}_4)_2$.

Color and properties: White crystals; very poisonous.

Specific gravity 6.42.

Soluble in nitric acid.

Derivation: By the action of a soluble lead salt on a solution of sodium arsenate, concentration and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Insecticide.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Beta-naphthalenesulfonate. See Lead naphthalenesulfonate, Beta-.

Lead, Black. See Graphite.

Lead Borate* $(\text{Pb}(\text{BO}_2)_2 \cdot \text{H}_2\text{O})$.

Color and properties: White powder; poisonous.

Constants: Specific gravity 5.598.

Soluble in dilute nitric acid; insoluble in water.

Derivation: By the interaction of solutions of lead hydroxide and boric acid, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Varnish and paint drier.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Carbolate. See Lead phenate.

Lead Carbonate* PbCO_3 .

Color and properties: White, powdery crystals; poisonous.

Constants: Specific gravity 6.43.
Soluble in acids; insoluble in water and alcohol.

Derivation: By adding a solution of sodium bicarbonate to a solution of lead nitrate.

Impurities: Basic lead carbonate.

Grades: Technical.

Containers: Wooden barrels.

Uses: Paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Carbonate, Basic* (Lead subcarbonate; White lead; Ceruse, Lead flake) $2\text{PbCO}_3 \cdot \text{Pb}(\text{OH})_2$.

Color and properties: White, amorphous powder; poisonous.

Constants: Melting-point: Decomposes.

Soluble in acids; insoluble in water.

Derivation: (a) Dutch process. By the corrosion of lead buckles in pots by means of acetic acid and carbon dioxide generated by the fermentation of waste tan-bark. (b) Carter process. By treating very finely divided lead in revolving wooden cylinders with vinegar (dilute acetic acid) and carbon dioxide.

Grades: Dry; ground in oil.

Containers: Wooden kegs.

Uses: Paint pigment; putty.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Chloride* PbCl_2 .

Color and properties: White crystals; poisonous.

Constants: Specific gravity 5.88; melting-point 498°C ; boiling-point 861°C - 954°C .

Slightly soluble in hot water and dilute hydrochloric acid; insoluble in alcohol and cold water.

Derivation: By the addition of hydrochloric acid or sodium chloride to a solution of a lead salt, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Preparation of lead salts.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Chromate* (Leipzig yellow)

PbCrO_4 .

Color and properties: Yellow crystals; poisonous.

Constants: Specific gravity 6.123; melting-point: Decomposes at 600°C .

Soluble in acids; insoluble in water.

Derivation: By interaction of solutions of sodium chromate and lead nitrate.

Method of purification: Washing.

Grades: Technical.

Containers: Wooden barrels; tin cans.

Uses: Paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Cyanide* $\text{Pb}(\text{CN})_2$.

Color and properties: White powder; very poisonous.

Slightly soluble in water.

Derivation: By the interaction of solutions of potassium cyanide and lead acetate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Metallurgy.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Dioxide. See Lead oxide, Brown.

Lead Dust. Lead in very finely powdered form.

Lead, Electrolytic. Pure lead obtained by electrolytic deposition.

Lead Flake. See Lead carbonate, Basic.

Lead Hydrate. See Lead hydroxide.

Lead Hydroxide* (Lead hydrate, Hydrated lead oxide) $2\text{PbO} \cdot \text{H}_2\text{O}$.

Color and properties: White, bulky powder; poisonous.

Constants: Specific gravity 7.592; melting-point: Decomposes at 145°C . Soluble in alkalis; slightly soluble in water.

Derivation: By the addition of sodium or ammonium hydroxide to a solution of a lead salt with subsequent filtration and drying.

Grades: Technical.
Containers: Cans.
Uses: Lead salts.
Fire hazard: None.
Railroad shipping regulations: None.

Lead Hyposulfite. See Lead thiosulfate.

Lead Iodide* PbI_2 .

Color and properties: Golden-yellow crystals or powder; poisonous.
Constants: Specific gravity 6.12; melting-point 358°C ; boiling-point 861°C .

Soluble in potassium iodide; insoluble in water and alcohol.

Derivation: By the interaction of lead acetate and potassium iodide.

Method of purification: Crystallization.

Grades: Technical; B. P.

Containers: Tin boxes.

Uses: Bronzing; mosaic gold; printing; photography; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Linoleate* (Lead plaster)

$\text{Pb}(\text{C}_{18}\text{H}_{31}\text{O}_2)_2$.

Color and properties: Yellowish-white paste; poisonous.

Soluble in acids.

Derivation: By heating a solution of lead nitrate with sodium linoleate.

Grades: Technical.

Containers: Tins.

Uses: Medicine; varnish.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Molybdate* PbMoO_4 .

Color and properties: Yellow powder; poisonous.

Soluble in acids; insoluble in water and alcohol.

Derivation: By adding a solution of lead nitrate to a solution of ammonium molybdate, concentration and crystallization.

Method of purification: Recrystallization.

Grades: Technical; C. P.

Containers: Boxes.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

See also Wulfenite.

Lead Monosulfide. See Lead sulfide.

Lead Monoxide. See Lead oxide, Yellow.

Lead Naphthalenesulfonate, Beta*
(Lead beta-naphthalenesulfonate)

$\text{Pb}(\text{C}_{10}\text{H}_7\text{SO}_3)_2$.

Color and properties: White crystalline powder; poisonous.

Soluble in alcohol; insoluble in water.

Derivation: By the action of lead acetate on beta-naphthalenemonosulfonic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Kegs.

Uses: Organic preparations.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Nitrate* $\text{Pb}(\text{NO}_3)_2$.

Color and properties: White crystals; promotes combustion in contact with organic matter; poisonous.

Constants: Specific gravity 4.53; melting-point: Decomposes between 205° and 223°C .

Soluble in water and alcohol.

Derivation: By the action of nitric acid on lead.

Grades: Technical; U. S. P.

Containers: Wood barrels.

Uses: Lead salts; medicine; mordant in dyeing and printing calico; matches, paint pigment; mordant for staining mother-of-pearl; oxidizer in the dyestuff industry; sensitizer in photography.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Lead Oleate* $\text{Pb}(\text{C}_{18}\text{H}_{33}\text{O}_2)_2$.

Color and properties: White, ointment-like granules or mass; poisonous.

Soluble in alcohol, ether, turpentine and benzol; insoluble in water.

Derivation: By the interaction of lead acetate and sodium oleate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Varnishes; lacquers; paint drier.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Oxide, Brown* (Lead dioxide; Anhydrous plumbic acid; Lead peroxide; Lead superoxide) PbO_2 .

Color and properties: Brown, hexagonal crystals; will cause many materials to take fire if merely mixed with them owing to its strong oxidizing action hence care needed in storing and shipping; poisonous.

Constants: Specific gravity 8.91; melting-point: Decomposes.

Soluble in glacial acetic acid; insoluble in water and alcohol.

Derivation: By adding bleaching powder to an alkaline solution of lead hydroxide.

Impurities: Lead chloride.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums.

Uses: Oxidizing agent; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Lead Oxide, Hydrated. See Lead hydroxide.

Lead Oxide, Red* (Red lead; Minium; Plumbo-plumbic oxide) Pb_3O_4 .

Color and properties: Bright-red powder.

Constants: Specific gravity 9.096; melting-point: Decomposes between 500° and 530°C .

Soluble in acids; insoluble in water.

Derivation: By heating litharge in a furnace in a current of air.

Grades: Technical.

Containers: Wooden kegs.

Uses: Medicine; ceramics; ceramic cements; matches; red pencils; lead peroxide; paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Oxide, Yellow* (Plumbous oxide; Lead protoxide; Litharge; Massicot; Lead monoxide) PbO .

Color and properties: Yellow to yellowish-red powder.

Constants: Specific gravity 9.375; melting-point 888°C .

Soluble in alkalis and acids; insoluble in water.

Derivation: By gently heating lead in a reverberatory furnace.

Grades: Technical.

Containers: Wooden kegs.

Uses: Medicine; ceramics; metallurgy; varnishes; ceramic cements; paint pigment; lutes; acid-resisting cements; rubber manufacture.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Peroxide. See Lead oxide, Brown.

Lead Phenate* (Lead phenolate; Lead carbolate) $\text{Pb}(\text{OH})\text{OC}_6\text{H}_5$.

Color and properties: Yellowish to grayish-white powder; poisonous.

Soluble in nitric acid; insoluble in water and alcohol.

Derivation: By boiling phenol with litharge.

Grades: Technical.

Containers: Wooden boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Phenolate. See Lead phenate.

Lead Plaster. See Lead linoleate.

Lead Protoxide. See Lead oxide, Yellow.

Lead Resinate* $\text{Pb}(\text{C}_{20}\text{H}_{20}\text{O}_2)_2$.

Color and properties: Yellowish-white paste; poisonous.

Insoluble in most solvents.

Derivation: By heating a solution of lead acetate and rosin oil.

Impurities: Lead oxide.

Grades: Technical.

Containers: Barrels.

Uses: Paint and varnish drier.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Lead Sesquioxide* Pb_2O_3 .

Color and properties: Reddish-yellow powder.

Constants: Melting-point 370°C .

Soluble in alkalis and acids; insoluble in water.

Derivation: By gently heating metallic lead.

Grades: Technical.

Containers: Wooden kegs.

Uses: Medicine, ceramics, ceramic cements; metallurgy, varnishes; paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Silicate* PbSiO_3 .

Color and properties: White, crystalline powder.

Insoluble in most solvents.

Derivation: By the interaction of lead acetate and sodium silicate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Ceramics; fireproofing fabrics.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Stearate* $\text{Pb}(\text{C}_{18}\text{H}_{35}\text{O}_2)_2$.

Color and properties: Yellowish-white paste.

Soluble in ether and alcohol.

Derivation: By heating a solution of lead acetate with sodium stearate.

Grades: Technical.

Containers: Tin cans.

Uses: Varnish and lacquer drier.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Subacetate. See Lead acetate, Monobasic.

Lead Subcarbonate. See Lead carbonate, Basic.

Lead, Sugar of. See Lead acetate.

Lead Sulfate* PbSO_4 .

Color and properties: White, rhombic crystals; poisonous.

Slightly soluble in hot water; insoluble in alcohol.

Derivation: By the interaction of solutions of lead nitrate and sodium sulfate.

Grades: Technical.

Containers: Wooden barrels.

Uses: Paint pigments.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Sulfide* (Galenite; Galena) PbS .

Color and properties: Silvery, metallic crystal, or black powder.

Constants: Specific gravity 7.13-7.7;

melting-point: Decomposes.

Soluble in acids; insoluble in water and alkalis.

Derivation: (a) Found in nature as the mineral galena. (b) By passing hydrogen sulfide gas into an acid solution of lead nitrate.

Grades: Technical.

Containers: Wooden barrels.

Uses: Ceramics; metallic lead.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Superoxide. See Lead oxide, Brown.

Lead Tetrachloride* PbCl_4 .

Color and properties: Yellow, oily liquid; poisonous.

Constants: Specific gravity 3.18; melting-point -15°C .

Decomposes in contact with water.

Derivation: By passing chlorine gas into lead chloride dissolved in concentrated hydrochloric acid.

Grades: Technical.

Containers: Iron drums.

Uses: Inorganic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Thiosulfate* (Lead hyposulfite)

PbS_2O_3 .

Color and properties: White crystals; poisonous.

Melting-point: Decomposes.

Soluble in acids and sodium thiosulfate solution; insoluble in water.

Derivation: By the interaction of solutions of lead nitrate and sodium thiosulfate, concentration and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Inorganic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Tungstate* (Lead wolframate)

PbWO_4 .

Color and properties: Yellowish powder; poisonous.

Constants: Specific gravity 8.235.

Soluble in acid; insoluble in water.

Derivation: By mixing solutions of lead nitrate and sodium tungstate, concentrating and crystallizing.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Wolframate. See Lead tungstate.

Lead Water. A 1 per cent solution of basic lead acetate.

Lead, White. See Lead carbonate, Basic.

Lead Yellow. See Lead chromate.

Leadhillite. Natural sulfato-carbonate of lead, perhaps $4\text{PbO} \cdot \text{SO}_3 \cdot 2\text{SO}_2 \cdot \text{H}_2\text{O}$ Arizona.

Lecithin* (Ova-lecithin). The phosphorus-containing constituent of brain substance.

Derivation: Obtained from egg yolk or cercal grains.

Color and properties: Yellowish-white waxy mass.

Soluble in alcohol, chloroform and ether; insoluble in water.

Grades: Technical.

Containers: Glass bottles

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Leiocom. See Dextrin

Leipzig Yellow. See Lead chromate.

Lemeet. See Aluminum acetate.

Lemon Oil* (Oleum limonis).

Color and properties: A pale yellow, limpid liquid; fragrant odor; aromatic, bitterish taste.

Chief known constituents: Limonene; pinene; citral; citronellal.

Constants: Specific gravity 0.858-0.859; optical rotation +60 to +64.

Soluble in alcohol, ether and chloroform.

Derivation: By expression from fresh lemon peel, the rind of the recent fruit of *Citrus limonum*.

Grades: Technical; U. S. P.

Containers: Glass bottles; copper flasks.

Uses: Flavoring agent; soft drinks; perfumery; confectionary.

Fire hazard: None.

Railroad shipping regulations: None.

Lemon Peel* (*Limonis cortex*).

Derivation: The outer rind of the ripe fruit, *Citrus limonum*.

Habitat: Northern India, cultivated in Italy and West Indies, Spain, U. S. and other semi-tropical countries.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; cooking; confectionery; lemon oil.

Fire hazard: None.

Railroad shipping regulations: None.

Lemon, Salt of, Essential. See Potassium binoxalate.

Lemon Yellow. See Lead chromate.

Lemon-grass Oil (*Verbena oil*, *East Indian*; *Melissa oil*).

Color and properties: Colorless, yellowish or brownish-yellow, liquid, essential oil; fragrant odor.

Chief known constituent: Citral.

Constants: Specific gravity 0.895-0.905.

Soluble in alcohol, ether, chloroform, acetone and benzol.

Derivation: Distilled in the East Indies from the grass, *Andropogon citratus*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Food extracts; perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Lepidine* (*Gamma-methylquinoline*; *Cincholepidine*)

Grades: Technical.

Containers: Wooden kegs.

Uses: Medicine, ceramics, ceramic cements; metallurgy, varnishes; paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Silicate* PbSiO_3 .

Color and properties: White, crystalline powder.

Insoluble in most solvents.

Derivation: By the interaction of lead acetate and sodium silicate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Ceramics; fireproofing fabrics.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Stearate* $\text{Pb}(\text{C}_{18}\text{H}_{35}\text{O}_2)_2$.

Color and properties: Yellowish-white paste.

Soluble in ether and alcohol.

Derivation: By heating a solution of lead acetate with sodium stearate.

Grades: Technical.

Containers: Tin cans.

Uses: Varnish and lacquer drier.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Subacetate. See Lead acetate, Monobasic.

Lead Subcarbonate. See Lead carbonate, Basic.

Lead, Sugar of. See Lead acetate.

Lead Sulfate* PbSO_4 .

Color and properties: White, rhombic crystals; poisonous.

Slightly soluble in hot water; insoluble in alcohol.

Derivation: By the interaction of solutions of lead nitrate and sodium sulfate.

Grades: Technical.

Containers: Wooden barrels.

Uses: Paint pigments.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Sulfide* (Galenite; Galena) PbS .

Color and properties: Silvery, metallic crystal, or black powder.

Constants: Specific gravity 7.13-7.7;

melting-point: Decomposes.

Soluble in acids; insoluble in water and alkalis.

Derivation: (a) Found in nature as the mineral galena. (b) By passing hydrogen sulfide gas into an acid solution of lead nitrate.

Grades: Technical.

Containers: Wooden barrels.

Uses: Ceramics; metallic lead.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Superoxide. See Lead oxide, Brown.

Lead Tetrachloride* PbCl_4 .

Color and properties: Yellow, oily liquid; poisonous.

Constants: Specific gravity 3.18; melting-point -15°C .

Decomposes in contact with water.

Derivation: By passing chlorine gas into lead chloride dissolved in concentrated hydrochloric acid.

Grades: Technical.

Containers: Iron drums.

Uses: Inorganic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Thiosulfate* (Lead hyposulfite)

PbS_2O_3 .

Color and properties: White crystals; poisonous.

Melting-point: Decomposes.

Soluble in acids and sodium thiosulfate solution; insoluble in water.

Derivation: By the interaction of solutions of lead nitrate and sodium thiosulfate, concentration and crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Inorganic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Lead Tungstate* (Lead wolframate)

PbWO_4 .

Color and properties: Yellowish powder; poisonous.

Lima Wood.

Derivation: A redwood of commerce obtained from *Caesalpinia bijuga*.

Habitat: Peru and Central America.

Grades: Technical.

Uses: The extract is used in dyeing textiles red.

Fire hazard: None.

Railroad shipping regulations: None.

Lime. See Calcium oxide.

"Lime, Chloride of." See Calcium hypochlorite.

Lime, Chlorinated. See Calcium hypochlorite.

Lime Hypophosphite. See Calcium hypophosphite.

Lime, Liver of. See Lime, Sulfurated.

Lime-nitrogen. See Calcium cyanamide.

Lime, Slaked. See Calcium hydroxide.

Lime, Sulfurated* (Calcic liver of sulfur; Liver of lime; Hepar calcis; Calcium sulfide, Crude). A mixture of calcium monosulfide and sulfate.

Color and properties: Yellowish-gray powder; odor of hydrogen sulfide.

Soluble in acids; insoluble in water and alcohol.

Derivation: By roasting calcium sulfate with coke.

Grades: Technical.

Containers: Iron drums.

Uses: Medicine; depilatory; luminous paint.

Fire hazard: None.

Railroad shipping regulations: None.

Lime Water. Calcium hydroxide solution.

Lime Oil.

Color and properties: A golden-yellow liquid; exceedingly refreshing odor.

Chief known constituents: Citral; limonene.

Constants: Specific gravity 0.882; optical rotation $+35^{\circ}$ to $+40^{\circ}$ C.

Soluble in alcohol, ether, chloroform, benzol and acetone.

Derivation: By expression from the rind of the fruit, *Citrus limetta*.

Grades: Technical.

Containers: Glass bottles; copper flasks.

Uses: Food extracts; perfumes; flavoring; confectionery.

Fire hazard: None.

Railroad shipping regulations: None.

Limestone. A rock composed mainly of calcium carbonate. Occurs in all parts of the United States (except District of Columbia and North Dakota) and in the southern parts of Canada.

Uses: Production of lime; metallurgy; building material.

Limonene, Inactive. See Dipentene.

Limonis Cortex, U. S. P., B. P. See Lemon peel.

Limonite (Brown iron ore). A natural hydrated iron oxide, $2\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$, an important iron ore.

Linaloe Oil.*

Color and properties: A colorless, fragrant liquid.

Chief known constituents: Linalool; geraniol.

Constants: Specific gravity 0.875 to 0.890.

Soluble in alcohol, ether, chloroform and benzol.

Derivation: Distilled in Mexico from a wood of uncertain botanical origin.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; copper flasks.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Linalool* $\text{C}_{10}\text{H}_{17}\text{OH}$.

Color and properties: Colorless liquid; odor similar to that of bergamot oil and French lavender.

Constants: Specific gravity 0.873; boiling-point 195° - 199° C.

Soluble in alcohol and ether.

Derivation: From linaloe oil.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Glass bottles; copper flasks.
 Uses: Perfumery.
 Fire hazard: None.
 Railroad shipping regulations: None.

Linalyl Acetate* (Bergamiol)

$C_{10}H_{17}C_2H_3O_2$.
 Color and properties: Clear, colorless liquid; odor of bergamot.
 Constants: Boiling-point 108° - 110° C.
 Soluble in alcohol and ether.
 Derivation: By the action of acetic acid on linalool in presence of sulfuric acid.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Extracts.
 Fire hazard: None.
 Railroad shipping regulations: None.

Linarite. A natural basic lead and copper sulfate, $PbO.CuO.SO_3.H_2O$ California.

Linden* (Tilia; Basswood; White wood; Linn tree).

Derivation: Flowers of *Tilia ulmifolia* and various species of *Tilliaceæ*.
 Habitat: Europe and Asia; cultivated in the United States.
 Grades: Technical.
 Containers: Bags.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Linimentum Ammoniaë, U. S. P., B. P.
Liniment of ammonia.**Linimentum Belladonnaë**, U. S. P., B. P.
Belladonna liniment.**Linimentum Calcis**, U. S. P., B. P. Lime liniment.**Linimentum Camphoræ**, U. S. P., B. P.
Camphor liniment.**Linimentum Chloroformi**, U. S. P., B. P.
Chloroform liniment.**Linimentum Saponis**, U. S. I., B. P.
Soap liniment.**Linimentum Saponis Mollis**, U. S. P.
Liniment of soft soap.**Linimentum Terebinthinaë**, U. S. P., B. P.
Turpentine liniment.

Linn Tree. See Linden.

Linnaïte (Cobalt pyrites). A natural cobalt sulfide, Co_3S_4 . A part of the cobalt is nearly always replaced by nickel and to a less extent by iron and copper.

Linseed* (Flaxseed; Linum).

Derivation: Ripe seeds of *Linum usitatissimum*.
 Habitat: Cultivated everywhere.
 Grades: Technical; U. S. P.; B. P.
 Containers: Bags.
 Uses: Medicine, source of linseed oil.
 Fire hazard: None.
 Railroad shipping regulations: None.

Linseed Oil* (Boiled oil; Flax-seed oil).
 Color and properties: Golden-yellow, amber or brown oil; inflammable.
 Constants: Specific gravity 0.9316-0.9354; iodine value 170-188; saponification value 189-195.

Soluble in alcohol, chloroform, amyl acetate, carbon bisulfide, benzol and turpentine.

Derivation: From the seeds of the flax plant, *Linum usitatissimum* by expression. The cold pressed oil is golden yellow while the hot pressed product is amber or brown. The latter may be bleached by treating with a solution of ferrous sulfate and exposing it to sunlight.

Habitat: Ireland, Northern Europe, Italy, Turkey, India, Argentine, Canada and the United States.

Method of purification: Filtration.
 Grades: Raw; boiled; double boiled; varnish oil.

Containers: Wooden barrels; tins; tank cars.

Uses: Paints; varnishes; patent leather lacquers; linoleum; rubber substitutes; preparing carron oil.

Fire hazard: Dangerous.
Railroad shipping regulations: None.

Linseed Oil, Sulphurated and terebinthinated. See Haarlem oil.

Linum, U. S. P., B. P. See Linseed.

Lion's Tooth. See Taraxacum, page 510.

Liquid Ammonia. See Ammonia, Anhydrous.

Liquid Amber Orientalis. See Styra.

Liquor Acidi Arsenosi, U. S. P., B. P. Solution of arsenous acid.

Liquor, Ammonia. See Ammonia liquor.

Liquor Ammonii Acetatis, U. S. P., B. P. Solution of ammonium acetate.

Liquor Arseni et Hydrargyri Iodidi, U. S. P., B. P. Solution of arsenous and mercuric iodides.

Liquor Calcis, U. S. P., B. P. Solution of calcium hydroxide.

Liquor Cresolis Compositus, U. S. P., B. P. Compound solution of cresol.

Liquor Ferri Chloridi, U. S. P., B. P. Solution of ferric chloride.

Liquor Ferri et Ammonii Acetatis, U. S. P. Solution of iron and ammonium acetates.

Liquor Ferri Subsulfatis, U. S. P. Solution of ferric subsulfate.

Liquor Ferri Tersulfatis, U. S. P., B. P. Solution of ferric sulfate.

Liquor Formaldehydi, U. S. P., B. P. Solution of formaldehyde.

Liquor, Gas. See Ammonia liquor.

Liquor Hydrogenii Dioxidii, U. S. P., B. P. Solution of hydrogen dioxide.

Liquor Hypophysis, U. S. P. Solution of hypophysis.

Liquor Iodi Compositus, U. S. P. Compound solution of iodine.

Liquor Magnesii Citratis, U. S. P. Solution of magnesium citrate.

Liquor Plumbi Subacetatis, U. S. P., B. P. Solution of lead subacetate.

Liquor Potassii Arsenitis, U. S. P. Solution of potassium arsenite.

Liquor Potassii Citratis, U. S. P. Solution of potassium citrate.

Liquor Potassi Hydroxidi, U. S. P., B. P. Solution of potassium hydroxide.

Liquor Sodæ Chlorinatæ, U. S. P., B. P. Solution of chlorinated soda.

Liquor Sodii Arsenatis, U. S. P., B. P. Solution of sodium arsenate.

Liquor Sodii Chloridi Physiologicus, U. S. P. Solution of sodium chloride, Physiological.

Liquor Sodii Glycerophosphatis, U. S. P. Solution of sodium glycerophosphate.

Liquor Sodii Hydroxidi, U. S. P. Solution of sodium hydroxide.

Liquor Zinci Chloridi, U. S. P., B. P. Solution of Zinc chloride.

Litharge. See Lead oxide, yellow.

Lithic Acid. See Acid uric.

Lithii Bromidum, U. S. P. See Lithium bromide.

Lithii Carbonas, U. S. P., B. P. See Lithium carbonate.

Lithii Citras, U. S. P., B. P. See Lithium citrate.

Lithiophyllite. A mineral containing Lithium-ferro-manganese phosphate.

Lithium* Li.

Color and properties: Soft, silvery metal; must be kept under naphtha or kerosene.

Constants: Specific gravity 0.534; melting-point 186°C .; boiling-point: Above 1400°C .

Soluble in acids; decomposes water, setting hydrogen free.

Derivation: By electrolysis of the fused chloride.

Grades: Pure.

Containers: Glass bottles containing kerosene.

Uses: Lithium salts; metallurgical research.

Fire hazard: None.

Railroad shipping regulations: None.

Lithium Benzoate* $\text{LiC}_6\text{H}_5\text{CO}_2$.

Color and properties: White crystals.

Soluble in water.

Derivation: By the action of benzoic acid on lithium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lithium Bromide* LiBr.

Color and properties: White crystals.

Constants: Specific gravity 3.466; melting-point $442^{\circ}\text{--}547^{\circ}\text{C}$.

Soluble in water.

Derivation: By the action of hydrobromic acid on lithium hydroxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lithium Carbonate* Li_2CO_3 .

Color and properties: White chalk-like powder.

Constants: Specific gravity 2.111; melting-point $618^{\circ}\text{--}710^{\circ}\text{C}$.

Soluble in acids; slightly soluble in water; insoluble in alcohol.

Derivation: By the action of sodium carbonate on a solution of lithium chloride, with subsequent crystallization.

Method of purification: Recrystallization.

Impurities: Lithium chloride; sodium carbonate.

Grades: Technical; U. S. P.; B. P.

Containers: Kegs; glass bottles.

Uses: Medicine; mineral waters.

Fire hazard: None.

Railroad shipping regulations: None.

Lithium Chloride* LiCl.

Color and properties: White crystals.

Constants: Specific gravity 1.998-2.074; melting-point 602°C .

Soluble in water, alcohol and ether.

Derivation: By the action of hydrochloric acid on lithium hydroxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; mineral waters.

Fire hazard: None.

Railroad shipping regulations: None.

Lithium Citrate* $\text{Li}_3\text{C}_6\text{H}_5\text{O}_7\cdot 4\text{H}_2\text{O}$.

Color and properties: White crystals.

Constants: Melting-point: Decomposes.

Soluble in water; slightly soluble in alcohol and ether.

Derivation: By the action of citric acid on lithium hydroxide, followed by crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine; mineral waters.

Fire hazard: None.

Railroad shipping regulations: None.

Lithium Fluophosphate*

$\text{LiF}\cdot\text{Li}_3\text{PO}_4\cdot\text{H}_2\text{O}$.

Color and properties: White crystals.

Derivation: By the interaction of lithium fluoride and lithium phosphate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Lithium Fluoride* LiF.

Color and properties: White, crystalline tablets.

Constants: Specific gravity 2.601; melting-point 801°C.

Soluble in hydrofluoric acid; slightly soluble in water.

Derivation: By the action of hydrofluoric acid on lithium hydroxide.

Grades: Technical.

Containers: Glass bottles.

Uses: Enamels.

Fire hazard: None.

Railroad shipping regulations: None.

Lithium Hydroxide* LiOH.

Color and properties: White, crystalline powder.

Soluble in water; slightly soluble in alcohol.

Derivation: By the action of water on lithium metal.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Lithium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Lithium Iodide* (a) LiI; (b) LiI₃H₂O.

Color and properties: (a) White crystals; (b) white crystals.

Constants: Specific gravity (a) 4.063.

Melting-point (a) 330°-446°C.; (b) 72°C.

Soluble in water.

Derivation: By the action of hydriodic acid on lithium hydroxide, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; mineral waters.

Fire hazard: None.

Railroad shipping regulations: None.

Lithographic Stone. A fine-grained, homogeneous limestone suitable for etching. Alabama, Iowa, Kentucky, Nebraska, South Dakota and Tennessee.

Lithophone. See Lithopone.

Lithopone* (Lithophone, Orr's white, Charlton white, Griffith's white).

Color and properties: White powder, consisting of barium sulfate, zinc sulfide and zinc oxide.

Derivation: By mixing solutions of barium sulfide and zinc sulfate, filtering, washing and drying the precipitate. The latter is heated to redness, plunged into water while hot, ground with water, thoroughly washed and dried.

Grades: Technical.

Containers: Barrels.

Uses: Paint pigment; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Litmus.*

Color and properties: A blue, amorphous powder (frequently compressed into small cakes or sticks).

Soluble in water.

Derivation: By treating various lichens (particularly *Variolaria lecanora* and *V. roccella*) with ammonia and potash and then fermenting the mass.

Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Indicator in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Liver of Sulfur. See Potassium sulfide.

Liverleaf. See Liverwort.

Liverwort (Hepatica; Liverleaf; Noble liverwort; kidney liverleaf).

Derivation: The whole plant of Hepatica.

Habitat: Europe.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lobelia* (Indian tobacco; Wild tobacco; Emetic herb).

Derivation: Dried leaves and tops of *Lobelia inflata*.

Habitat: Canada and United States.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lobeline* $C_{18}H_{23}NO_2$.

Color and properties: Yellow, honey-like liquid; poisonous.

Soluble in alcohol and chloroform; slightly soluble in ether.

Derivation: By extraction from the seeds of *Lobelia inflata*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood.

Derivation: The heartwood of *Haematoxylum campechianum*. The raw logwood comes in the form of rough logs, 3 feet long, which are either ground or rasped into small chips. These chips after being aged by being exposed to the atmosphere, are subjected to extraction.

Habitat: Central America and West Indies (Jamaica).

Grades: Technical; B. P.

Containers: Freight cars.

Uses: Textile and leather dyeing; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood Crystals* (Hematin crystals).

Derivation: By concentrating logwood liquor in evaporating pans and by crystallizing.

Grades: Technical, sold on basis of tinctorial value.

Containers: Wooden barrels.

Uses: Textile and leather dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood Extract* (Hematin extract, Hematin paste).

Derivation: By concentrating logwood liquor in vacuum pans until it reaches a specific gravity of 1.25 (50°Tw).

Grades: Technical, sold on basis of tinctorial value.

Containers: Wooden barrels.

Uses: Textile and leather dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood Extract, Solid* (Hematin extract, Solid).

Derivation: By evaporating logwood extract to dryness.

Grades: Technical, sold on basis of tinctorial value.

Containers: Wooden boxes.

Uses: Textile and leather dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood Liquor.

Derivation: An unstable decoction of logwood obtained by extracting the chips with water. It usually has a strength of 15°Tw. (Specific gravity 1.075).

Grades: Technical.

Containers: Wooden barrels.

Uses: Textile and leather dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Loja Bark. See *Cinchona bark*, Loja.**Lovage** (*Levisticum*; Sea parsley; *Ligusticum*).

Derivation: Whole plant of *Levisticum officinale*.

Habitat: Southern Europe.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lovage Oil* (*Levisticum* oil).

Color and properties: A colorless oil; characteristic odor.

Constants: Specific gravity: Root oil, 1.03; Fruit oil, 0.935; Herb oil, 0.928.

Soluble in alcohol, ether, chloroform, carbon bisulfide, acetone and benzol.

Derivation: Distilled from the root, fruit or herb of *Levisticum officinale*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; copper flasks.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Loxa Bark. See *Cinchona bark*, Loxa.**Lubricating Oils.***

Derivation: Mineral oils obtained by fractional distillation from petroleum,

coal-tar, etc., by removal of the lighter constituents. Vegetable and animal oils are also used for lubricating purposes, but are not generally known as lubricating oils.

Classification: Cylinder stocks, neutral oil, paraffin oil, engine oil, machine oils, spindle oils, transformer oil, etc.

Grades: In accordance with their viscosity and specific gravity.

Containers: Wooden barrels; tank cars.

Uses: Lubrication.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Lugol Solution. See Potassium iodide.

Lumbang Oil (Candle-nut oil).

Color and properties: A limpid, colorless or yellowish liquid; pleasant odor; bland taste.

Constants: Specific gravity 0.923; saponification value 184-192; iodine value 163.7.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: From the candle-nut, the seed of *Aleuritis moluccana*, by expression.

Method of purification: Filtration.

Grades: Crude; refined.

Containers: Wooden barrels.

Uses: Illuminant; paints; caulking; soap manufacture.

Fire hazard: None.

Railroad shipping regulations: None.

Lunar Caustic. See Silver Nitrate.

Lupanin* $C_{15}H_{24}N_2O$.

Color and properties: White, crystalline alkaloid; poisonous.

Constants: Melting-point $44^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: From the seeds of *Lupinus albus* and *Lupinus angustifolios*.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lupetazine* (Dimethylpiperazine, Di-propylenediamine)

$NH(C_2H_5CH_3)_2NH$.

Color and properties: Colorless, oily liquid.

Constants: Boiling-point 153° - $158^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the reduction of dimethylpyrazine with alcoholic sodium.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Organic synthesis; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lupinine* ($C_{21}H_{40}N_2O_2$).

Color and properties: White, crystalline alkaloid; poisonous.

Constants: Melting-point 68.5° - $69.2^{\circ}C$; boiling-point 255° - $257^{\circ}C$.

Soluble in alcohol, ether, acetone and chloroform; decomposed by water.

Derivation: By extraction from the seeds of *Lupinus luteus* and *Lupinus niger*.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lupulin.*

Derivation: Glandular trichomes separated from fruit of *Humulus lupulus*.

Habitat: Europe, Asia and North America.

Grades: Technical; U. S. P.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lustrose. The proprietary name of a compound used in the textile trade for sizing.

Lycopodium* (Club-moss, Vegetable sulfur).

Color and properties: Fine yellow powder.

Derivation: Spores of *Lycopodium clavatum*.

Habitat: North America, Asia and Europe.

Lobeline* $C_{18}H_{23}NO_2$.

Color and properties: Yellow, honey-like liquid; poisonous.

Soluble in alcohol and chloroform; slightly soluble in ether.

Derivation: By extraction from the seeds of *Lobelia inflata*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood.

Derivation: The heartwood of *Haematoxylin campechianum*. The raw logwood comes in the form of rough logs, 3 feet long, which are either ground or rasped into small chips. These chips after being aged by being exposed to the atmosphere, are subjected to extraction.

Habitat: Central America and West Indies (Jamaica).

Grades: Technical; B. P.

Containers: Freight cars.

Uses: Textile and leather dyeing; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood Crystals* (Hematin crystals).

Derivation: By concentrating logwood liquor in evaporating pans and by crystallizing.

Grades: Technical, sold on basis of tinctorial value.

Containers: Wooden barrels.

Uses: Textile and leather dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood Extract* (Hematin extract, Hematin paste).

Derivation: By concentrating logwood liquor in vacuum pans until it reaches a specific gravity of 1.25 (50°Tw).

Grades: Technical, sold on basis of tinctorial value.

Containers: Wooden barrels.

Uses: Textile and leather dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood Extract, Solid* (Hematin extract, Solid).

Derivation: By evaporating logwood extract to dryness.

Grades: Technical, sold on basis of tinctorial value.

Containers: Wooden boxes.

Uses: Textile and leather dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Logwood Liquor.

Derivation: An unstable decoction of logwood obtained by extracting the chips with water. It usually has a strength of 15°Tw. (Specific gravity 1.075).

Grades: Technical.

Containers: Wooden barrels.

Uses: Textile and leather dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Loja Bark. See *Cinchona bark*, Loja.**Lovage** (*Levisticum*; Sea parsley; *Ligusticum*).

Derivation: Whole plant of *Levisticum officinale*.

Habitat: Southern Europe.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lovage Oil* (*Levisticum* oil).

Color and properties: A colorless oil; characteristic odor.

Constants: Specific gravity: Root oil, 1.03; Fruit oil, 0.935; Herb oil, 0.928.

Soluble in alcohol, ether, chloroform, carbon bisulfide, acetone and benzol.

Derivation: Distilled from the root, fruit or herb of *Levisticum officinale*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; copper flasks.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Loxa Bark. See *Cinchona bark*, Loxa.**Lubricating Oils.***

Derivation: Mineral oils obtained by fractional distillation from petroleum,

Fire hazard: None.

Railroad shipping regulations: None.

Mackintoshite. A natural hydrous uranium-thorium silicate. Texas.

Madder.

Derivation: Pulverized root of *Rubia tinctorum*, a plant formerly cultivated in Europe and Asia Minor. The glucosides contained therein, when decomposed by fermentation yield alizarin, now largely replaced by alizarin obtained from the anthracene oil of coal-tar.

Magell. See *Mezereum*.

Magenta. See *Fuchsine*.

Magister of Bismuth. See *Bismuth subnitrate*.

Magma Bismuthi, U. S. P. *Bismuth magma*.

Magma Magnesiae, U. S. P. *Magnesia magma*.

Magnalium. An alloy of aluminum and magnesium.

Magnesia. See *Magnesium oxide*.

Magnesia Alba. See *Magnesium carbonate, Basic*.

Magnesia, Calcined. See *Magnesium oxide*.

Magnesia, Calcined, Heavy. See *Magnesium oxide*.

Magnesia, Calcined, Light. See *Magnesium oxide*.

Magnesia, Heavy. See *Magnesium oxide*.

Magnesia Levis. See *Magnesium oxide*.

Magnesia, Light. See *Magnesium oxide*.

Magnesii Carbonas, Levis, U. S. P., B. P. See *Magnesium carbonate*.

Magnesii Carbonas Ponderosus, U. S. P., B. P. See *Magnesium carbonate, Basic*.

Magnesii Oxidum, U. S. P., B. P. See *Magnesium oxide*.

Magnesii Oxidum Ponderosum, U. S. P., B. P. See *Magnesium oxide*.

Magnesii Sulfas, U. S. P., B. P. See *Magnesium sulfate*.

Magnesite. Natural magnesium carbonate, $MgCO_3$. British Columbia, California, New Jersey, New York, Washington, Quebec, Austria and Greece.

Uses: Refractory linings for steel and copper furnaces and other metallurgical equipment and for Portland cement kilns; making wood pulp; Sorel's cement; magnesium metal and salts; ferro-magnesite.

Magnesium* Mg.

Color and properties: Silvery, malleable, moderately hard metal. Burns with an intense white light.

Constants: Specific gravity 1.69-1.75; melting-point $650^{\circ}C$; boiling-point $1120^{\circ}C$.

Soluble in acids; insoluble in water.

Derivation: By electrolysis of fused carnallite or magnesite.

Method of purification: Distillation.

Grades: Technical; pure; powder; ribbon; ingots; sheets; bars.

Containers: Wooden barrels.

Uses: Pyrotechnics; photographic flash-light powder, ribbon and sheets; alloys; magnesium salts; alloyed with lead for production of hydrogen.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Magnesium Alba. See *Magnesium carbonate, Basic*.

Magnesium-Ammonium Phosphate* (Magnesium-ammonium ortho-phosphate) $MgNH_4PO_4 \cdot 6H_2O$.

Color and properties: White powder.
Constants: Specific gravity 1.71; melting-point: Decomposes.

Soluble in acids; insoluble in alcohol and water.

Derivation: By the interaction of solutions of a magnesium salt and ammonium phosphate.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Bisphosphate* (Magnesium phosphate, Monobasic; Acid magnesium phosphate; Magnesium-tetrahydrogen phosphate; Monomagnesium phosphate) $\text{MgH}_4(\text{PO}_4)_2$.

Color and properties: Yellowish, crystalline powder.

Soluble in acids; insoluble in water and alcohol.

Derivation: By the action of orthophosphoric acid on magnesium hydroxide.

Grades: Technical.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Borocitrate*

$\text{Mg}(\text{BO}_2)_2 \cdot \text{Mg}_3(\text{C}_6\text{H}_5\text{O}_7)_2 \cdot \text{Aq}$.

Color and properties: White powder or small, white, lustrous scales.

Soluble in water.

Derivation: By mixing magnesium borate and magnesium citrate.

Grades: Technical.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Bromide* $\text{MgBr}_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: Colorless, very deliquescent crystals; bitter taste.

Constants: Melting-point; Decomposes. Soluble in water; slightly soluble in alcohol.

Derivation: By the action of hydrobromic acid on magnesium oxide with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium-Calcium Chloride. See Calcium-magnesium chloride.

Magnesium Carbonate* (Light magnesium carbonate) (a) MgCO_3 ; (b) $\text{MgCO}_3 \cdot 3\text{H}_2\text{O}$.

Color and properties: Very light, white powder, consisting of a mixture of crystals and amorphous particles.

Constants: Specific gravity (a) 3.04; (b) 1.868.

Melting-point (a) Decomposes at 350°C .

Soluble in acids; insoluble in water.

Derivation: (a) Found as such in nature.

(b) By mixing solutions of magnesium sulfate and sodium carbonate, boiling, filtering, washing and drying.

Method of purification: Washing

Grades: Technical; U. S. P.; B. P.

Containers: Barrels.

Uses: Magnesium salts; fireproofing; composition flooring; tooth-pastes; boiler-scale prevention; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Carbonate, Basic* (Heavy magnesium carbonate, Magnesia alba) (a) $4\text{MgCO}_3 \cdot \text{Mg}(\text{OH})_2 \cdot 5\text{H}_2\text{O}$ (b) $3\text{MgCO}_3 \cdot \text{Mg}(\text{OH})_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: White, granular powder.

Constants: Specific gravity 2.18.

Soluble in dilute acids; insoluble in water.

Derivation: By mixing solutions of magnesium sulfate and sodium carbonate, evaporating to dryness, digesting with water, filtering, washing and drying.

Method of purification: Washing.

Grades: Technical; U. S. P.; B. P.

Containers: Barrels.

Uses: Magnesium salts; fireproofing; composition flooring; medicine; face powder; dry-cleaning clothes.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Carbonate, Heavy. See Magnesium carbonate, Basic.

Magnesium Carbonate, Light. See Magnesium carbonate.

Magnesium Chloride* (a) MgCl_2 ; (b) $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: (a) Colorless or white crystals; (b) Colorless or white crystals.

| | | |
|------------------|----------|--------------------------|
| Constants: | (a) | (b) |
| Specific gravity | 2.177 | 1.569 |
| | | Loses |
| Melting-point | 708°C | $2\text{H}_2\text{O}$ at |
| | | 100°C |
| Boiling-point | Red heat | Decomposes |

Soluble in water and alcohol.

Derivation: (a) By heating magnesium-ammonium chloride; (b) By the action of hydrochloric acid on magnesium oxide.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Magnesium salts; dressing cotton fabrics; manufacturing disinfectants; fire extinguishers; fireproofing wood; magnesium cement.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Citrate*

$\text{Mg}_3(\text{C}_6\text{H}_5\text{O}_7)_2 \cdot 14\text{H}_2\text{O}$.

Color and properties: White scales.

Soluble in water and acids.

Derivation: By the action of citric acid on magnesium hydroxide.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Wooden kegs; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Dust.* Finely divided magnesium metal used in pyrotechnics, photographic flash-lights and chemical preparations.

Magnesium Fluoride* MgF_2 .

Color and properties: White crystals.

Constants: Specific gravity 2.472; melting-point 1396°C.

Soluble in nitric acid; insoluble in alcohol and water.

Derivation: By adding sodium fluoride or hydrofluoric acid to a solution of magnesium salt.

Grades: Technical.

Containers: Wooden barrels.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Fluosilicate. See Magnesium silicofluoride.

Magnesium Formate,*

$\text{Mg}(\text{CHO}_2)_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: Colorless crystals.

Soluble in water; insoluble in alcohol and ether.

Derivation: By the action of formic acid on magnesium oxide.

Grades: Technical.

Containers: Boxes; glass bottles.

Uses: Analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Glycerinophosphate. See Magnesium glycerophosphate.

Magnesium Glycerophosphate* (Magnesium glycerinophosphate)

$\text{MgPO}_4 \cdot \text{C}_3\text{H}_5(\text{OH})_2$.

Color and properties: Colorless powder.

Soluble in water.

Derivation: By the action of glycerophosphoric acid on magnesium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Hydrate. See Magnesium hydroxide.

Magnesium-Hydrogen Phosphate. See Magnesium phosphate.

Magnesium Hydroxide* (Magnesium hydrate) $\text{Mg}(\text{OH})_2$.

Color and properties: White powder.
 Constants: Specific gravity 2.36; melting-point: Decomposes.

Soluble in solutions of ammonium salts; slightly soluble in water.

Derivation: By precipitation from a solution of a magnesium salt by sodium hydroxide.

Grades: Technical.

Containers: Wooden barrels.

Uses: Sugar refining; magnesium oxide.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Hypophosphate*

$\text{Mg}(\text{H}_2\text{PO}_2)_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: White crystals.
 Soluble in water; insoluble in alcohol and ether.

Derivation: By the action of hypophosphoric acid on magnesium oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Iodide* $\text{MgI}_2 \cdot 8\text{H}_2\text{O}$.

Color and properties: White, deliquescent, crystalline powder.

Constants: Melting-point: Decomposes.

Soluble in water, alcohol and ether.

Derivation: By heating magnesium in iodine vapors.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Lactate*

$\text{Mg}(\text{C}_3\text{H}_5\text{O}_3)_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: White crystals; very bitter taste.

Soluble in water; insoluble in alcohol and ether.

Derivation: By the action of lactic acid on magnesium oxide, with subsequent crystallization.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Lactophosphate* (Magnesium phospholactate).

Color and properties: White powder, containing 45 per cent of magnesium lactate.

Soluble in water.

Derivation: By mixing magnesium lactate and magnesium phosphate, dissolving and crystallizing.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Nitrate* $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: White crystals.

Constants: Specific gravity 1.464; melting-point 90°C.

Soluble in water and alcohol.

Derivation: By the action of nitric acid on magnesium oxide, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Pyrotechnics.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Magnesium Oleate* $\text{Mg}(\text{C}_{18}\text{H}_{33}\text{O}_2)_2$.

Color and properties: Yellowish mass.

Soluble in linseed oil; insoluble in water.

Derivation: By the interaction of magnesium chloride and sodium oleate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Varnish driers.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Oxide* (Magnesia, Heavy magnesia, Heavy calcined magnesia, Light calcined magnesia) MgO .

Color and properties: White powder, either light or heavy depending on whether it is prepared by heating magnesium carbonate or basic magnesium carbonate.

Constants: Specific gravity 3.22; melting-point 2800°C .

Soluble in acids and ammonia salts; insoluble in water.

Derivation: By calcining magnesium carbonate or basic magnesium carbonate.

Impurities: Carbonate.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden barrels.

Uses: Medicine; heat insulation; pipe coverings; making refractories; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Oxide, Heavy. See Magnesium oxide.

Magnesium Oxide, Light. See Magnesium oxide.

Magnesium Perborate* MgB_4O_7 .

Color and properties: White powder.

Soluble in water.

Derivation: By the action of boric acid on magnesium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dryers.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Peroxide* MgO_2 .

Color and properties: White powder.

Soluble in acids; insoluble in water.

Derivation: From sodium or barium peroxide with magnesium sulfate in a concentrated solution.

Method of purification: Crystallization.

Grades: Technical.

Containers: Iron drums.

Uses: Bleaching woolen and silk fabrics.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Magnesium Phosphate* (Dimagnesium ortho-phosphate, Magnesium-hydro-

gen phosphate, Magnesium phosphate, Dibasic) $\text{MgHPO}_4 \cdot 3\text{H}_2\text{O}$.

Color and properties: White, crystalline powder.

Constants: Specific gravity 2.123.

Soluble in acids; slightly soluble in water.

Derivation: By the action of meta-phosphoric acid on magnesium oxide.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Phosphate, Dibasic. See Magnesium phosphate.

Magnesium Phosphate, Monobasic. See Magnesium biphosphate.

Magnesium Phospholactate. See Magnesium lactophosphate.

Magnesium Salicylate*

$\text{Mg}(\text{C}_7\text{H}_5\text{O}_2)_2 \cdot 4\text{H}_2\text{O}$.

Color and properties: Colorless, crystalline powder.

Soluble in water.

Derivation: By the action of salicylic acid on magnesium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Silicate* $3\text{MgSiO}_3 \cdot 5\text{H}_2\text{O}$.

Color and properties: Fine, white powder.

Insoluble in water or alcohol.

Derivation: By the interaction of a magnesium salt and a soluble silicate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Medicine; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Silicofluoride* (Magnesium fluosilicate) MgSiF_6 .

Color and properties: White, crystalline powder.

Derivation: By acting on magnesium hydroxide or carbonate with hydrofluosilicic acid.

Grades: Technical.

Containers: Wooden barrels.

Uses: Ceramics; concrete hardeners.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Sulfate* (Epsom Salt) (a) MgSO_4 ; (b) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$.

Color and properties: Colorless crystals.

Constants: Specific gravity (a) 2.65; (b) 1.6784.

Soluble in water and alcohol.

Derivation: (a) By the action of sulfuric acid on magnesium oxide, hydroxide or carbonate.

(b) Mined in a high degree of purity in British Columbia.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden barrels.

Uses: Medicine; leather industry; fireproofing; warp-sizing cotton goods; loading cotton-goods.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Sulfite* $\text{MgSO}_3 \cdot 6\text{H}_2\text{O}$.

Color and properties: White, crystalline powder.

Constants: Melting-point: Loses $6\text{H}_2\text{O}$ at 200°C .; boiling-point: Decomposes. Slightly soluble in water; insoluble in alcohol.

Derivation: By the action of sulfurous acid on magnesium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium-Tetrahydrogen Phosphate. See Magnesium biphosphate.

Magnesium Tungstate* (Magnesium wolframate) MgWoO_4 .

Color and properties: White crystals. Soluble in acids; insoluble in water and alcohol.

Derivation: By the interaction of solutions of magnesium sulfate and ammonium tungstate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Fluorescent screens for Roentgen rays; luminescent paint.

Fire hazard: None.

Railroad shipping regulations: None.

Magnesium Wolframate. See Magnesium tungstate.

Magnetic Pyrites. See Pyrrhotite.

Magnetite (Magnetic iron ore, Lodestone). Natural magnetic iron oxide, $\text{FeO} \cdot \text{Fe}_2\text{O}_3$. Contains 72.4 per cent iron. Found throughout United States and Canada.

Maize Oil. See Corn oil.

Malachite. Natural, green, basic copper carbonate, $2\text{CuO} \cdot \text{CO}_2 \cdot \text{H}_2\text{O}$. Contains 40.3 per cent copper. Arizona, California, Colorado, Connecticut, Florida, Georgia, Idaho, Maryland, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, North Carolina, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, Wisconsin and Wyoming.

Malachite, Artificial. See Copper carbonate.

Male Fern Oil.*

Color and properties: Colorless to pale yellow liquid.

Chief known constituents: Hexyl and octyl esters of fatty acids.

Constants: Specific gravity 0.850; boiling-point 140° - 250°C .

Soluble in alcohol and ether.

Derivation: Distilled from the rhizome of *Dryopteris filix-mas marginalis*.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Copper flasks; glass bottles.

Use: Medicine; preparation of liquors (gin).

Fire hazard: None.

Railroad shipping regulations: None.

Maleic Acid. See Acid maleic.

Malenic Acid. See Acid maleic.

Malic Acid. See Acid malic.

Mallow, Marsh. See Althea.

Malon Oil. See Black-fish oil.

Malonic Acid. See Acid malonic.

Malonic Acid Diethylester* (Ethyl malonate) $\text{CH}_2(\text{CO}_2\text{C}_2\text{H}_5)_2$.

Color and properties: Colorless liquid.

Constants: Specific gravity 1.061; boiling-point 198°C .

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By passing hydrogen chloride into cyanoacetic acid dissolved in absolute alcohol, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Malonurea. See Veronal.

Maltha (Pissasphalt). Natural, dark, viscous bitumen. Soluble in benzol, carbon bisulfide, etc.; insoluble in water.

Maltose. Malt sugar.

Maltum, U. S. P. Malt.

Manaca (Vegetable mercury; Camganiba; Manacan; Mercurio-vegetal; Geratacaca; Brunfelsia).

Derivation: Root of *Franciscea uniflora*.

Habitat: Brazil.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Manacan. See Manaca.

Mandarin Oil.

Color and properties: Yellow, liquid oil; characteristic odor.

Chief known constituents: Limonene; methylesters of anthranilic and methylanthranilic acids.

Constants: Specific gravity 0.85 to 0.86; boiling-point 175° - 179°C .; optical rotation $+70^\circ$.

Soluble in alcohol, ether and chloroform.

Derivation: Expressed from the fresh peel of the mandarin orange, *Citrus nobilis*.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Flavoring; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mandrake. See Podophyllum.

Manganese.* A reddish-gray metallic element, Mn. Occurs abundantly in nature, chiefly as oxides. See Alabandite, Braunitz, Chalcophanite, Coronadite, Manganite, Psilomelane, Pyrolusite, Rhodochrosite, Rhodonite, Tephroite, Wad. Various manganese minerals are found throughout the United States and Canada. The manganese ores of commerce are chiefly pyrolusite and wad, which come chiefly from India, Brazil and Russia.

Constants: Specific gravity 7.42; melting-point 1260°C .; boiling-point 1900°C .

Soluble in dilute acids; decomposes water.

Derivation: By aluminothermic reduction of the oxide.

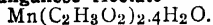
Grades: Technical.

Containers: Boxes.

Uses: Metallurgy.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese Acetate*

Color and properties: Pale red crystals.

Constants: Specific gravity 1.6.

Soluble in water and alcohol.

Derivation: By the action of acetic acid on manganese hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Textile dyeing; manufacturing bistre.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese, Battery. See Manganese dioxide.**Manganese Binoxide.** See Manganese dioxide.**Manganese Borate*** MnB_4O_7

Color and properties: White powder.

Soluble in water.

Derivation: By the action of boric acid on manganese hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Varnish and oil drier.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese-Boron. An alloy of manganese and boron used in the making of brass, bronze and other alloys.**Manganese Carbonate*** MnCO_3

Color and properties: Rose colored crystals.

Constants: Specific gravity 3.125-3.66; melting-point: Decomposes.

Soluble in dilute acids; insoluble in water.

Derivation: A precipitate from the addition of sodium carbonate to a solution of a manganese salt followed by filtration, washing and drying.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese Chloride* (a) MnCl_2 ; (b) $\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$

Color and properties: Rose colored crystals.

Constants: Specific gravity (a) 2.478; (b) 1.913.

Melting-point (a) 650°C ; (b) 87.5°C .Boiling-point (b) 106°C .

Soluble in water, slightly soluble in alcohol; insoluble in ether.

Derivation: By the action of hydrochloric acid on manganese dioxide, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese Citrate* $\text{Mn}11\text{C}_6\text{H}_5\text{O}_7$

Color and properties: White powder.

Soluble in water.

Derivation: By the action of citric acid on manganese hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese-Copper. An alloy of manganese and copper used for electric resistances and the stay-bolts of locomotive fire-boxes.**Manganese Dioxide*** (Manganese binoxide; Battery manganese; Manganese peroxide) MnO_2

Color and properties: Black crystals or amorphous powder.

Constants: Specific gravity 5.026; melting-point: Decomposes.

Soluble in hydrochloric acid; insoluble in water.

Derivation: (a) Found as such in nature. (b) By heating manganese oxide in a furnace in presence of oxygen.

Grades: Technical; U. S. P.

Containers: Barrels.

Uses: Oxidizing agent; electric dry-cells; manganese compounds, medicine.

Fire hazard: Dangerous.
 Railroad shipping regulations: None.

Manganese Glycerinophosphate. See
 Manganese glycerophosphate.

Manganese Glycerophosphate* (Man-
 ganese glycerinophosphate)
 $\text{MnC}_8\text{H}_7\text{O}_8\cdot\text{PO}_3$.

Color and properties: Yellowish-white
 powder.

Soluble in water and acids.
 Derivation: By the action of glycerophosphoric acid on manganese hydroxide.

Grades: Technical.
 Containers: Glass bottles; boxes.

Uses: Medicine.
 Fire hazard: None.

Railroad shipping regulations: None.

Manganese Green. See Barium manganate.

Manganese Hydrate. See Manganic hydroxide.

Manganese Hydroxide. See Manganic hydroxide.

Manganese Hypophosphite*

$\text{Mn}(\text{H}_2\text{PO}_2)_2\cdot 11\text{H}_2\text{O}$.

Color and properties: Rose-red crystals.
 Soluble in water; insoluble in alcohol.

Derivation: By the action of hypophosphoric acid on manganese hydroxide.

Method of purification: Crystallization.
 Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese Iodide. See Manganous iodide.

Manganese Lactate*

$\text{Mn}(\text{C}_8\text{H}_5\text{O}_8)_2\cdot 3\text{H}_2\text{O}$.

Color and properties: Pale red crystals.

Soluble in water and alcohol.

Derivation: By the action of lactic acid on manganese hydroxide.

Grades: Technical.
 Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese-Lead Resinate.*

Derivation: A mixture of lead and manganese resinates.

Grades: Technical.

Containers: Wooden kegs.

Uses: Varnish and oil drier.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Manganese Linoleate* $\text{Mn}(\text{C}_{18}\text{H}_{31}\text{O}_2)_2$.

Color and properties: Dark-brown, plaster-like mass.

Soluble in linseed oil.

Derivation: By boiling a manganese salt, sodium linoleate and water.

Grades: Technical.

Containers: Wooden kegs.

Uses: Varnish drier.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese Monoxide. See Manganous oxide.

Manganese Oleate* $\text{Mn}(\text{C}_{18}\text{H}_{33}\text{O}_2)_2$.

Color and properties: Brown, granular mass.

Soluble in oleic acid; insoluble in water.

Derivation: By boiling manganese chloride, sodium oleate and water.

Grades: Technical.

Containers: Wooden kegs.

Uses: Medicine; varnish drier.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese Oxalate* $\text{MnC}_2\text{O}_4\cdot 2\frac{1}{2}\text{H}_2\text{O}$.

Color and properties: White crystalline powder.

Constants: Specific gravity 2.453; melting-point: Decomposes at 150°C .

Soluble in dilute acids; very slightly soluble in water.

Derivation: By adding sodium oxalate to manganous chloride.

Grades: Technical.

Containers: Wooden barrels.

Uses: Metallic manganese; varnish drier.

Fire hazard: None.

Railroad shipping regulations: None.

Manganese Oxide. See Manganous oxide.

Manganese Peroxide. See Manganese dioxide.

Manganese Phosphate. See Manganous ortho-phosphate.

Manganese Protoxide. See Manganous oxide.

Manganese Resinate* $Mn(C_{20}H_{29}O_2)_2$.
Color and properties: Dark, brownish-black mass.

Soluble in hot linseed oil; insoluble in water.

Derivation: By boiling manganese hydroxide, resin oil and water.

Grades: Technical.

Containers: Wooden kegs.

Uses: Varnish and oil drier.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Manganese Silicate. See Manganous silicate.

Manganese Sulfate. See Manganous sulfate.

Manganese-Titanium. An alloy of manganese and titanium.

Mangani Dioxidum Præcipitatum, U. S. P. See Manganese dioxide

Manganic Hydroxide* (Manganese hydroxide; Manganese hydrate)
 $Mn(OH)_2$.

Color and properties: A brown powder, occurring in nature as psilomelane.

Constants: Specific gravity 3.258; melting-point: Decomposes.

Soluble in acids; insoluble in water.

Derivation: By adding a solution of sodium hydroxide to a solution of

a manganese salt, filtering, washing and drying.

Grades: Technical.

Containers: Wooden barrels.

Uses: Pigment for fabrics; ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Manganin.* An alloy of copper and manganese with small amounts of nickel and iron, of high resistance and exceedingly low temperature coefficient.

Manganite. Gray manganese ore. A natural hydrated manganese oxide, $Mn_2O_3 \cdot H_2O$. Alabama, Georgia and New Mexico.

Manganous Fluoride* (Manganese fluor-
 ide) MnF_2 .

Color and properties: Reddish powder.

Constants: Specific gravity 3.98; melting-point 856°C.

Soluble in acids; insoluble in water, alcohol and ether.

Derivation: By the action of hydrofluoric acid on manganous hydroxide.

Grades: Technical.

Containers: Wooden kegs.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Manganous Iodide* (Manganese iodide)
 MnI_2 .

Color and properties: Yellowish-brown, deliquescent, crystalline mass.

Constants: Melting-point: Decomposes.

Soluble in water with decomposition.

Derivation: By the action of hydriodic acid on manganous hydroxide.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Manganous Ortho-phosphate* (Manganese phosphate) $Mn_3(PO_4)_2 \cdot 7H_2O$.
Color and properties: Reddish-white powder.

Soluble in mineral acids; insoluble in water.

Derivation: By the action of ortho-

phosphoric acid on manganous hydroxide.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; chemical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Manganous Oxide* (Manganese protoxide; Manganese oxide) MnO .

Color and properties: Grass-green powder.

Constants: Specific gravity 5.09-5.18; melting-point: Is converted into MnO_2 .

Soluble in acids; insoluble in water.

Derivation: (a) By reduction of the dioxide in hydrogen. (b) By heating the carbonate with exclusion of air.

Grades: Technical.

Containers: Wooden barrels; iron drums.

Uses: Medicine; textile printing; analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Manganous Silicate* (Manganese silicate) $MnSiO_3$.

Color and properties: Red crystals or yellowish-red powder.

Constants: Specific gravity 3.35; melting-point $1218^{\circ}C$.

Insoluble in water.

Derivation: By the interaction of manganese oxide and hydrosilicic acid.

Grades: Technical.

Containers: Wooden kegs.

Uses: Ceramics; coloring glass.

Fire hazard: None.

Railroad shipping regulations: None.

Manganous Sulfate* (Manganese sulfate) $MnSO_4 \cdot 4H_2O$.

Color and properties: Translucent, pale rose-red, efflorescent prisms.

Constants: Specific gravity 2.107; boiling-point $30^{\circ}C$.

Soluble in water; insoluble in alcohol.

Derivation: By the action of sulfuric acid on manganese oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; kegs.

Uses: Medicine; textile dyeing; ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Mangrove.

Derivation: From *Rhizophora mangle*.

Habitat: West Africa and Borneo.

Grades: Mangrove cutch: 55 per cent tannin; Liquid: 25 per cent tannin.

Containers: Wooden barrels.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Manihot Utilissima. See Tapioca.

Manna.

Derivation: Concrete saccharine exudation of *Fraxinus ornus*.

Habitat: Mediterranean basin, Spain to Asia Minor.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Manna Sugar. See Mannitol.

Mannite. See Mannitol.

Mannitol* (Manna sugar; Mannite)

$C_6H_8(OH)_6$.

Color and properties: White crystalline prisms.

Constants: Specific gravity 1.521; melting-point 165° - $166^{\circ}C$; boiling-point 290° - $295^{\circ}C$.

Soluble in water; slightly soluble in alcohol; insoluble in ether.

Derivation: By extraction from manna, *Fraxinus ornus*.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Maranta. See Starch.

Marble. Crystalline, granular limestone or dolomite, generally susceptible of a high polish. Alabama, Arizona, Arkansas, California, Canada, Colorado, Connecticut, Delaware, Georgia, Idaho, Iowa, Kentucky, Maryland, Massachu-

setts, Michigan, Missouri, Nevada, New Jersey, New Mexico, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington and Wyoming.

Marcasite (White iron pyrite) Natural, orthorhombic iron disulfide, FeS_2 . Contains 46.6 per cent iron. Canada, Colorado, Idaho, Iowa, Kansas, Michigan, Missouri, Montana, Oklahoma, Oregon and Wisconsin.

Margarine Oils.* Edible oils, used in the manufacture of oleomargarine, and containing not over 0.1 per cent of free fatty acid.

Marignac's Salt. *Potassium stannosulfate.*

Marigold. See *Calendula*.

Marjoram* (Sweet marjoram; Knotted marjoram).

Derivation: The entire herb, *Origanum marjoram*).

Habitat: Southern Europe and Western Asia; widely cultivated.

Grades: Technical.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Marjoram Oil.*

Color and properties. Yellowish or greenish-yellow liquid; strong, penetrating odor.

Chief known constituents: Terpeneol; terpenes.

Constants: Specific gravity 0.890-0.910; optical rotation $+5^\circ$ to $+18^\circ$.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the herb, *Origanum majorana*.

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Medicine; perfuming soaps.

Fire hazard: None.

Railroad shipping regulations: None.

Marl. A soft, earthy deposit of calcium carbonate, containing more or less clay and sand, used in manufacture of cement. Alabama, Arkansas, Canada, Delaware, Florida, Georgia, Indiana, Iowa, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Mississippi, Minnesota, New Hampshire, New Jersey, New York, North Carolina, Ohio, Tennessee, South Carolina, Vermont, Virginia and Wyoming.

Marrubium* (Horehound; Hoarhound). Derivation: Dried leaves and tops of *Marrubium vulgare*.

Habitat: Europe, Central Asia and United States.

Grades: Technical; U. S. P.

Containers: Boxes; bags.

Uses: Medicine; confectionery.

Fire hazard: None.

Railroad shipping regulations: None.

Marseillene. Soap soluble in gasoline.

Marsh Gas. See Methane, page 506.

Marshmallow. See *Althea*.

Mary-bud. See *Calendula*.

Massa Ferri Carbonatis, U. S. P. Mass of ferrous carbonate.

Massa Hydrargyri, U. S. P. Mass of mercury.

"Massecuite." A mixture of sirup and cane-sugar crystals obtained in the sugar industry.

Massicot. Natural lead monoxide, PbO . Contains 92.8 per cent lead. Colorado, Idaho, Nevada and Virginia.

Masterwort. See *Imperatoria*.

Mastic (Balsam tree; Lentisk; *Pistachia* galls, *Mastiche*; *Mastix*).

Derivation: Concrete resinous exudations of *Pistacia lentiscus*.

Habitat: Mediterranean Islands.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine; condiment; tooth cements; chewing-gum; adhesive; lacquers; plasters; incense.

Fire hazard: None.

Railroad shipping regulations: None.

See also Gum mastic.

Mastic Oil.

Color and properties: A yellow liquid; characteristic, strongly balsamic odor.

Chief known constituents: Pinenes.

Constants: Specific gravity 0.858; optical rotation +25°.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: Distilled from mastic.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mata-Perro. See Condurango.

Matico.

Derivation: Leaves of *Piper angustifolium*.

Habitat: Peru, Bolivia, Brazil, Mexico and Cuba.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Matico Oil.

Color and properties: Yellowish-brown, liquid oil; peculiar odor.

Chief known constituents: Asarone; methyl eugenol.

Constants: Specific gravity: Leaf: 0.93; Flower: 1.13; optical rotation +5.5 to -0.25.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the leaves or flowers of *Piper angustifolium*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; copper flasks.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Matricaria* (German chamomile; Wild chamomile).

Derivation: Dried flower-heads of *Matricaria chamomilla*.

Habitat: Europe and Western Asia; cultivated in the United States.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

May Apple. See *Podophyllum*.

May Blossom. See *Convallaria*.

May Lily. See *Convallaria*.

Mazola. See Corn oil.

Meadow Crocus. See *Colchicum*.

Meadow Saffron. See *Colchicum*.

Meconic Acid. See Acid meconic.

Meerschaum (Sepiolite). A tough, compact, natural, hydrous magnesium silicate. California, New Mexico.

Megass. See Bagasse.

Mel, U. S. P. Honey.

Mel Depuratum, U. S. P., B. P. Clarified honey.

Mel Rosae, U. S. P. Honey of rose.

Melaconite. Natural black copper oxide, CuO. Contains 79.8 per cent copper. The name given to an earthy, black, massive variety of tenorite. Alabama, Arizona, Colorado, Idaho, North Carolina, Pennsylvania, Tennessee, Virginia, Washington and Wyoming.

Melampyrit. See Dulcite.

Melegueta Pepper. See *Amomum melegueta*.

Meletim. See Quercetin.

Melissa Oil. See Lemon-grass oil.

Mellitose. See Raffinose, page 508.

Mellitriose. See Raffinose, page 508.

Melon Pumpkin Seeds, B. P. See *Pepo*.

Menaccanite. See Ilmenite. New Jersey, New York and North Carolina.

Menhaden Oil*

Color and properties: A yellowish-brown or reddish-brown liquid; characteristic odor.

Constants: Specific gravity 0.927-0.933; saponification value 190.6; iodine value 139-180; refractive index 1.480.

Soluble in ether, benzol, naphtha and carbon bisulfide.

Derivation: By cooking or pressing the body of the menhaden (moss-bunker) fish. Winter oils are made by chilling which separates stearine.

Method of purification: Filtration and bleaching with fullers' earth.

Grades: Prime crude; brown strained; strained; bleached; winter oil; bleached winter white oil. Also sometimes graded:—A, extra pale; B, pale; C, brown; D, dark brown.

Containers: Wooden barrels; tank cars.

Uses: Leather dressing; chamois tanning; soap making, after hydrogenation; tempering steel; adulterating cod-liver oil.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Mentha Aquatica. Watermint.

Mentha Crispa. See Crispmint.

Mentha Piperita, U. S. P. See Peppermint

Mentha Pulegium. European pennyroyal.

Mentha Viridis, U. S. P. Spearmint.

Menthene. See Pinene.

Menthene $C_{10}H_{18}$ or $C_{10}H_{16}$.

Derivation: (a) A dehydration product of menthol or the hydrogenation product of cymene. (b) A synonym for pinene (q.v.).

Menthol (Hexahydrothymol; Methylhydroxyisopropylcyclohexane - para-mentheneol; Peppermint camphor) $C_{10}H_{18}OH$.

Color and properties: Colorless crystals; peppermint-like odor.

Constants: Specific gravity 0.890; melting-point $44.5^{\circ}C$; boiling-point $215.5^{\circ}C$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By freezing from peppermint oil.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles; tins.

Uses: Medicine; perfumery; confectionery.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Menthol Valerate. See Validol.

Menyanthin. See Inulin.

Mercer's Liquor. A solution containing potassium ferricyanide used for etching.

Mercuric Acetate $Hg(C_2H_3O_2)_2$.

Color and properties: White, crystalline powder; poisonous.

Constants: Specific gravity: 3.2544.

Soluble in alcohol and water.

Derivation: By the action of acetic acid on mercury.

Method of purification: Crystallization.

Grades: Technical

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric-Ammonium Chloride* (Ammoniated mercury chloride; White precipitate; Aminomercuric chloride; Ammoniated mercury) HgNH_2Cl .

Color and properties: White, pulverulent lumps; earthy, metallic taste; poisonous.

Soluble in ammonium carbonate and sodium thiosulfate solutions and in warm acids; insoluble in water.

Derivation: By precipitating mercuric chloride with ammonium hydroxide in excess.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Benzoate*

$\text{Hg}(\text{C}_7\text{H}_5\text{O}_2)_2 \cdot \text{H}_2\text{O}$.

Color and properties: White crystals; poisonous.

Soluble in solutions of sodium chloride and ammonium benzoate; slightly soluble in alcohol.

Derivation: By the interaction of a mercuric salt and sodium benzoate.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Biniodide. See Mercuric iodide.

Mercuric Bromide* HgBr_2 .

Color and properties: White, rhombic crystals; poisonous.

Constants: Specific gravity 5.74; melting-point 235°C .

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By adding potassium bromide to a solution of a mercuric salt and crystallizing.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Chloride* (Corrosive sublimate; Mercury bichloride; Mercury chloride, Corrosive) HgCl_2 .

Color and properties: White crystals; very poisonous!

Constants: Specific gravity 5.32; melting-point 265°C ; boiling-point 303°C .

Soluble in water, alcohol, ether, pyridine and acetic acid ester.

Derivation: By subliming mercuric sulfate and common salt.

Method of purification: Recrystallization and sublimation.

Impurities: Mercurous chloride.

Grades: Technical; lump; crystals; granular; powder; U. S. P.; B. P.

Containers: Wooden boxes; glass bottles.

Uses: Antiseptic; medicine; tanning; wood-preservative; hat manufacture; embalming; textile printing.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Cyanide* $\text{Hg}(\text{CN})_2$.

Color and properties: Colorless, transparent prisms, darkened by light; poisonous.

Constants: Specific gravity 4.018; melting-point: Decomposes.

Soluble in water and alcohol.

Derivation: By the interaction of mercuric oxide and an aqueous solution of hydrocyanic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Amber glass bottles; wooden kegs.

Uses: Medicine; manufacturing cyanogen gas; photography.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Iodide* (Mercuric biniodide) HgI_2 .

Color and properties: (a) Red, tetragonal crystals; (b) Yellow, rhombic crystals; poisonous.

| Constants: | (a) | (b) |
|------------------|---|---------------------|
| Specific gravity | 6.2-6.32 | 5.91-6.06 |
| Melting-point | 241°C - 257°C | 241°C |
| Boiling-point | 340°C | 340°C |

Melegueta Pepper. See *Amomum melegueta*.

Meletim. See Quercetin.

Melissa Oil. See Lemon-grass oil.

Mellitose. See Raffinose, page 508.

Mellitriose. See Raffinose, page 508.

Melon Pumpkin Seeds, B. P. See Pepo.

Menaccanite. See Ilmenite. New Jersey, New York and North Carolina.

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Color and properties: A yellowish-brown or reddish-brown liquid; characteristic odor.

Constants: Specific gravity 0.927-0.933; saponification value 190.6; iodine value 139-180; refractive index 1.480.

Soluble in ether, benzol, naphtha and carbon bisulfide.

Derivation: By cooking or pressing the body of the menhaden (moss-bunker) fish. Winter oils are made by chilling which separates stearine.

Method of purification: Filtration and bleaching with fullers' earth.

Grades: Prime crude; brown strained; strained; bleached; winter oil; bleached winter white oil. Also sometimes graded:—A, extra pale; B, pale; C, brown; D, dark brown.

Containers: Wooden barrels; tank cars.

Uses: Leather dressing; chamois tanning; soap making, after hydrogenation; tempering steel; adulterating cod-liver oil.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Mentha Aquatica. Watermint.

Mentha Crispa. See Crispmint.

Mentha Piperita, U. S. P. See Peppermint

Mentha Pulegium. European pennyroyal.

Mentha Viridis, U. S. P. Spearmint.

Menthene. See Pinene.

Menthene $C_{10}H_{18}$ or $C_{10}H_{16}$.

Derivation: (a) A dehydration product of menthol or the hydrogenation product of cymene. (b) A synonym for pinene (q.v.).

Menthol (Hexahydrothymol; Methylhydroxyisopropylcyclohexane - para-mentheneol; Peppermint camphor) $C_{10}H_{18}OH$.

Color and properties: Colorless crystals; peppermint-like odor.

Constants: Specific gravity 0.890; melting-point $44.5^{\circ}C$; boiling-point $215.5^{\circ}C$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By freezing from peppermint oil.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles; tins.

Uses: Medicine; perfumery; confectionery.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Menthol Valerate. See Validol.

Menyanthin. See Inulin.

Mercer's Liquor. A solution containing potassium ferricyanide used for etching.

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Color and properties: White, crystalline powder; poisonous.

Constants: Specific gravity: 3.2544.

Soluble in alcohol and water.

Derivation: By the action of acetic acid on mercury.

Method of purification: Crystallization.

Grades: Technical

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric-Ammonium Chloride* (Ammoniated mercury chloride; White precipitate; Aminomercuric chloride; Ammoniated mercury) HgNH_2Cl .

Color and properties: White, pulverulent lumps; earthy, metallic taste; poisonous.

Soluble in ammonium carbonate and sodium thiosulfate solutions and in warm acids; insoluble in water.

Derivation: By precipitating mercuric chloride with ammonium hydroxide in excess.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Benzoate*

$\text{Hg}(\text{C}_7\text{H}_5\text{O}_2)_2 \cdot \text{H}_2\text{O}$.

Color and properties: White crystals; poisonous.

Soluble in solutions of sodium chloride and ammonium benzoate; slightly soluble in alcohol.

Derivation: By the interaction of a mercuric salt and sodium benzoate.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Biniodide. See Mercuric iodide.

Mercuric Bromide* HgBr_2 .

Color and properties: White, rhombic crystals; poisonous.

Constants: Specific gravity 5.74; melting-point 235°C .

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By adding potassium bromide to a solution of a mercuric salt and crystallizing.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Chloride* (Corrosive sublimate; Mercury bichloride; Mercury chloride, Corrosive) HgCl_2 .

Color and properties: White crystals; very poisonous!

Constants: Specific gravity 5.32; melting-point 265°C ; boiling-point 303°C .

Soluble in water, alcohol, ether, pyridine and acetic acid ester.

Derivation: By subliming mercuric sulfate and common salt.

Method of purification: Recrystallization and sublimation.

Impurities: Mercurous chloride.

Grades: Technical; lump; crystals; granular; powder; U. S. P.; B. P.

Containers: Wooden boxes; glass bottles.

Uses: Antiseptic; medicine; tanning; wood-preservative; hat manufacture; embalming; textile printing.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Cyanide* $\text{Hg}(\text{CN})_2$.

Color and properties: Colorless, transparent prisms, darkened by light; poisonous.

Constants: Specific gravity 4.018; melting-point: Decomposes.

Soluble in water and alcohol.

Derivation: By the interaction of mercuric oxide and an aqueous solution of hydrocyanic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Amber glass bottles; wooden kegs.

Uses: Medicine; manufacturing cyanogen gas; photography.

Fire hazard: None.

Railroad shipping regulations: None.

Mercuric Iodide* (Mercuric biniodide) HgI_2 .

Color and properties: (a) Red, tetragonal crystals; (b) Yellow, rhombic crystals; poisonous.

| Constants: | (a) | (b) |
|------------------|---|---------------------|
| Specific gravity | 6.2-6.32 | 5.91-6.06 |
| Melting-point | 341°C - 357°C | 241°C |
| Boiling-point | 340°C | 340°C |

Derivation: By heating cinnabar in air, or with lime.

Method of purification: Distillation.

Grades: Technical; U. S. P.; B. P.

Containers: Leather bottles; stone bottles; iron flasks.

Uses: Mercury salts; thermometers; medicine; mirror manufacture; mercury vapor lamps (Cooper-Hewitt, etc); amalgams; extraction of gold and silver from their ores; physical and chemical apparatus; catalyst; production of fulminate, and vermilion; electric rectifiers; pharmacy; cathode in electrolytic chemical processes.

Fire hazard: None.

Railroad shipping regulations: None.

Mercury Acetate. See Mercuric acetate.

Mercury, Ammoniated. See Mercuric-ammonium chloride.

Mercury-Ammonium Chloride. See Mercuric-ammonium chloride.

Mercury Benzoate. See Mercuric benzoate.

Mercury Bichloride. See Mercuric chloride.

Mercury Biniodide. See Mercuric iodide.

Mercury Bisulfate. See Mercuric sulfate.

Mercury Bromide. See Mercuric bromide.

Mercury Chloride. See Mercuric chloride and Mercurous chloride.

Mercury Chloride, Ammoniated. See Mercuric-ammonium chloride.

Mercury Chloride, Corrosive. See Mercuric chloride.

Mercury Chloride, Mild. See Mercurous chloride.

Mercury Cyanide. See Mercuric cyanide.

Mercury Fulminate* $\text{Hg}(\text{CNO})_2$.

Color and properties. Dark brown, crystalline powder; explodes when dry under the slightest friction or shock; must be kept moist until used.

Constants: Specific gravity 4.42; melting-point: Explodes.

Soluble in alcohol, ammonium hydroxide and hot water; slightly soluble in cold water.

Derivation: By acting on mercury with strong nitric acid and alcohol, in lots of five pounds in glass bottles.

Grades: Technical.

Containers: Canvas bags in stone crocks filled with water.

Uses: Manufacture of caps and detonators for producing explosions for military, industrial and sporting purposes.

Fire hazard: Dangerous.

Railroad shipping regulations: Cannot be shipped by express.

Mercury, Hahnemann's Soluble. See Mercurous oxide, Black.

Mercury Iodide, Red. See Mercuric iodide.

Mercury Iodide, Yellow. See Mercuric iodide.

Mercury Monochloride. See Mercurous chloride.

Mercury Nitrate. See Mercuric nitrate.

Mercury Nitrate, Ammoniated. See Mercurous oxide, Black.

Mercury Oleate. See Mercuric oleate.

Mercury Oxide, Black. See Mercurous oxide, Black.

Mercury Oxide, Red. See Mercuric oxide, Red.

Mercury Persulfate. See Mercuric sulfate.

Mercury-Potassium Cyanide. See Mercuric-potassium cyanide.

Mercury Rhodanide. See Mercuric sulfocyanide.

Mercury, Soluble, Hahnemann's. See Mercurous oxide, Black.

Mercury Sulfate. See Mercuric sulfate.

Mercury Sulfide, Black. See Mercuric sulfide, Black.

Mercury Sulfide, Red. See Mercuric sulfide, Red.

Mercury Sulfocyanate. See Mercuric sulfocyanate.

Mercury Sulfocyanide. See Mercuric sulfocyanate.

Mercury Sulfuret, Red. See Mercuric sulfide, Red.

Mescal Buttons. Anhalonium.

Metacetone. See Diethylketone.

Metacetic Acid. See Acid propionic.

Metacinnabarite. A mineral of the same composition as cinnabar, but black in color, and crystallizing in isometric forms (tetrahedral). See Cinnabar, California.

Meta-chloronitrobenzene. See Chloronitrobenzene, Meta-.

Meta-chloronitrobenzol. See Chloronitrobenzene Meta-.

Meta- Compounds are substitution products derived from benzol (q.v.), in which the substituting radicals or groups are (constitutionally) placed in certain definite positions in the benzol nucleus. See also Ortho- compounds and Para- compounds. The meta-compounds will be found under the name of

the compound, as: Meta-cresol see Cresol, Meta-; Meta-toluidine see Toluidine, Meta-; etc.

Meta-cresol. See Cresol, Meta-.

Meta-dimethylbenzene. See Xylol, Meta-.

Meta-dimethylbenzol. See Xylol, Meta-.

Meta-dinitrobenzene. See Dinitrobenzene.

Meta-dinitrobenzol. See Dinitrobenzene.

Meta-dioxybenzene. See Resorcinol.

Meta-dioxybenzol. See Resorcinol.

Meta-gelatin. See Gelatin.

Metanilic Acid. See Acid sulfanilic, Meta-.

Meta-nitraniline. See Nitraniline.

Meta-nitrohydroxybenzoic Acid. See Acid nitrosalicylic, Meta-.

Meta-para-cresol* A mixture of approximately 40 per cent meta-cresol and 60 per cent para-cresol.

Meta-phenylenediamine. See Phenylenediamine.

Meta-pyridinecarboxylic Acid. See Acid nicotinic.

Meta-stannic Acid. See Acid stannic.

Meta-tartaric Acid. See Acid meta-tartaric.

Meta-titanic Acid. See Acid titanic.

Meta-toluylenediamine. See Toluylenediamine, Meta-.

Meta-toluylic Acid. See Acid toluic, Meta-.

Meta-vanadic Acid. See Acid vanadic.

Metal, Dutch. See Dutch metal.

Metal, Fusible, D'Arcet.* A grayish-white metallic alloy consisting of: Bismuth, 50 per cent; Lead, 25 per cent; Tin, 25 per cent.

Constants: Melting-point 94°C.

Uses: Valves, wires, etc., for safety sprinklers, boilers, fusible plugs, etc.

Metal, Fusible, Rose.* A grayish-white metallic alloy consisting of: Bismuth, 50 parts; Lead, 28.1 parts; Tin, 24.1 parts.

Constants: Melting-point 95°C.

Uses: Valves, wires, etc., for safety sprinklers, boilers, fusible plugs, etc.

Metal, Fusible, Wood.* Whitish-gray metallic alloy consisting of: Bismuth, 50 per cent; Lead, 25 per cent; Tin, 12.5 per cent; Cadmium, 12.5 per cent.

Constants: Melting-point 70°C.

Uses: Valves, wires, etc., for safety sprinklers, boilers, fusible plugs, etc.; making casts of the human body.

Metal, Monel. See Monel metal.

Methacetin. See page 506.

Methanamide. See Formamide.

Methane. See page 506.

Methanecarboxylic Acid. See Acid acetic.

Methanedicarboxylic Acid. See Acid malonic.

Methanethiomethane. See Methyl sulfide.

Methenyl Tribromide. See Bromoform.

Methenyl Trichloride. See Chloroform.

Methenyl Triiodide. See Iodoform.

Methyl Acetate* $\text{CH}_3\text{CO}_2\text{CH}_3$.

Color and properties: Colorless, volatile, inflammable, liquid; fragrant odor.

Constants: Specific gravity 0.92438; melting-point -98.05°C.; boiling-point 54.05°C.

Soluble in water, alcohol and ether.

Derivation: By heating methyl alcohol and acetic acid in presence of sulfuric acid and distilling.

Method of purification: Rectification. Grades: Technical.

Containers: Glass bottles; iron drums

Uses: Extracts; perfumery; solvent.

Fire hazard: Dangerous.

Railroad shipping regulations. Red label.

Methylacetic Acid. See Acid propionic

Methyl Acetone. A water-white, anhydrous liquid, containing from 70 to 80 per cent. of combined acetone and methyl acetate, the acetone constituting about two-thirds of the mixture used as a rubber solvent.

Methylacetyl. See Acetone.

Methylal* (Methylenedimethyl ester Formal; Methylenedimethylate) $\text{CH}_2(\text{OCH}_3)_2$.

Color and properties: Colorless, volatile, inflammable liquid; chloroform like odor; pungent taste.

Constants: Specific gravity 0.855°C. boiling-point 42°C.

Soluble in water, alcohol and ether.

Derivation: By distilling methyl alcohol, with sulfuric acid and manganese dioxide.

Method of purification: Rectification. Grades: Technical.

Containers: Steel drums; glass bottle;

Uses: Medicine; perfumery; organic synthesis; solvent.

Fire hazard: Dangerous.

Railroad shipping regulations. Red label.

Methyl Alcohol* (Wood alcohol; Wood spirit; Wood naphtha; Methyl hydroxide; Methyl hydrate; Columbia spirits; Columbian spirits) CH_3OH . Color and properties: Clear, colorless mobile, volatile, inflammable liquid poisonous.

Constants: Specific gravity 0.7913; melting-point $-97.8^{\circ}\text{C}.$; boiling-point $66.78^{\circ}\text{C}.$

Soluble in water, alcohol and ether.

Derivation: Pyroligneous acid obtained from destructive distillation of wood is neutralized with lime and the methyl alcohol distilled off. The distillate is purified by dilution with water, to effect a separation of acetones and hydrocarbon oils. The liquid is redistilled over lime in a rectifying still and then filtered through a tower containing charcoal to remove the coloring matter and unpleasant odor. By distilling again over lime, methyl alcohol of 99 per cent is obtained.

Method of purification: Rectification. Grades: Pure (acetone-free); crude (wood spirit); U. S. P.

Containers: Barrels; iron drums; tank cars.

Uses: Solvent for varnish gums; manufacturing formaldehyde; organic synthesis; denaturing ethyl alcohol; general solvent; fuel.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Methylaminophenol Sulfate, Para-*

$\text{C}_6\text{H}_4\text{N}(\text{CH}_3)\text{SO}_4$.

Color and properties: White needles.

Constants: Melting-point 250° - $260^{\circ}\text{C}.$

Soluble in water and alcohol.

Derivation: By the action of sulfuric acid on methyl-para-aminophenol.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Photographic developer.

Fire hazard: None.

Railroad shipping regulations: None.

Methylaniline (Monomethylaniline)

$\text{C}_6\text{H}_5\text{NH}(\text{CH}_3)$.

Color and properties: Reddish-brown, oily liquid.

Constants: Specific gravity 0.991; melting-point $-80^{\circ}\text{C}.$; boiling-point 190° - $191^{\circ}\text{C}.$

Soluble in alcohol, ether and chloroform; slightly soluble in water.

Derivation: By heating methyl iodide with aniline and subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Methyl Anthranilate*

$\text{H}_2\text{N}(\text{C}_6\text{H}_4)\text{CO}_2\text{CH}_3$.

Color and properties: Colorless crystals.

Constants: Specific gravity 1.168; melting-point $24.5^{\circ}\text{C}.$; boiling-point $125^{\circ}\text{C}.$

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By heating anthranilic acid and methyl alcohol in presence of sulfuric acid, with subsequent distillation.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Methylantraquinone*

$\text{CH}_3\text{C}_6\text{H}_3(\text{CO})_2\text{C}_6\text{H}_4$.

Color and properties: White needles.

Constants: Melting-point $177^{\circ}\text{C}.$; boiling-point: Sublimes.

Soluble in ether and benzol; very slightly soluble in alcohol.

Derivation: By heating anthraquinone and methyl alcohol in presence of sulfuric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Methylated Spirits (Denatured alcohol).

Derivation: Ethyl alcohol rendered unfit for human consumption by the addition of 10 per cent of methyl alcohol.

Grades: Technical.

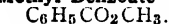
Containers: Barrels; iron drums.

Uses: Solvent; fuel.

Fire hazard: Dangerous.
Railroad shipping regulations: Red label.

Methylbenzene. See Toluol.

Methyl Benzoate* (Essence Niobe)



Color and properties: Colorless solution.

Constants: Specific gravity 1.0937; melting-point -12.3°C .; boiling-point 198.6°C .

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By heating methyl alcohol and benzoic acid in presence of sulfuric acid, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Methylbenzoic Acid. See Acid toluic, Ortho-.

Methylbenzol. See Toluol.

Methylbenzoylecgonine. See Cocaine.

Methyl-beta-naphtholate. See Naphthol-methyl ether, Beta-.

Methyl Bromide* (Bromomethane)



Color and properties: Colorless, transparent, volatile liquid; burning taste; chloroform-like odor.

Constants: Specific gravity 1.732; melting-point -84°C .; boiling-point 4.5°C .

Soluble in alcohol and ether; forms a voluminous crystalline hydrate with cold water.

Derivation: By the action of bromine on methyl alcohol in presence of phosphorus, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Steel cylinders.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: Green label.

Methylcatechol. See Guaiacol.

Methyl Chloride* (Chloromethane)



Color and properties: Colorless gas; ethereal odor.

Constants: Specific gravity 0.9197; melting-point -91.5°C .; boiling-point 23.73°C .

Soluble in water and alcohol.

Derivation: By the action of hydrochloric acid on methyl alcohol in presence of sulfuric acid.

Grades: Technical.

Containers: Steel cylinders.

Uses: Medicine; refrigeration.

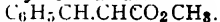
Fire hazard: None.

Railroad shipping regulations: Green label.

Methylchlorosulfonate* CH_3ClSO_3 .

A military poison gas used in the late war.

Methyl Cinnamate*



Color and properties: Colorless crystals; strawberry-like odor.

Constants: Specific gravity 1.0415; melting-point 36°C .; boiling-point 259.6°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating methyl alcohol, cinnamic acid and sulfuric acid, with subsequent distillation.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Perfumes; flavoring; confectionery.

Fire hazard: None.

Railroad shipping regulations: None.

Methylcinnamylketone. See Benzylideneacetone.

Methylcrotonic Acid. See Acid tiglic.

Methyl Cyanide* (Acetonitrile) CH_3CN .

Color and properties: Colorless, limpid liquid; aromatic odor; poisonous.

Constants: Specific gravity 0.7897; melting-point -41°C .; boiling-point 83°C .

Soluble in water, alcohol and ether.

Derivation: By heating acetamide with phosphorus pentoxide, and subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; perfumes; extracts.

Fire hazard: None.

Railroad shipping regulations: None.

Methyldichloroarsine* CH_3AsCl_2 .

A military poison gas used in the late war.

Methylethylcarbinol. See Butyl alcohol, Secondary.

Methylethyl Ketone*

$\text{CH}_3\text{COC}_2\text{H}_5$.

Color and properties: Colorless liquid; acetone-like odor; inflammable.

Constants: Specific gravity 0.808; boiling-point 79.6°C .

Soluble in water, alcohol and ether.

Derivation: (a) From the butyl alcohol obtained as a by-product in the fermentation process of manufacturing acetone. (b) By heating methyl-acetoacetate with potassium hydroxide and subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; tank cars.

Uses: Organic synthesis; manufacture of smokeless powder; solvent.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Methylethylketone, Brominated. See Brominated methylethyl ketone.

Methyl Formate* CH_3COOH .

Color and properties: Colorless liquid; agreeable odor.

Constants: Specific gravity 0.9731; melting-point -99.75°C .; boiling-point 31.75°C .

Soluble in water, alcohol and ether.

Derivation: By heating methyl alcohol with sodium formate and hydrochloric acid, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis

Fire hazard: None.

Railroad shipping regulations: Red label.

Methylglyoxalidine. See Lysidine.

Methyl Hexane. See Heptane.

Methyl Hydrate. See Methyl alcohol.

Methyl Hydroxide. See Methyl alcohol.

Methyl Iodide* (Iodomethane) CH_3I .

Color and properties: Colorless liquid; turns brown on exposure to light.

Constants: Specific gravity 2.2852; melting-point -66.1°C .; boiling-point 45.35°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of methyl alcohol, sodium iodide and sulfuric acid, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Amber glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Methylmorphine. See Codeine.

Methylnitrobenzene. See Nitrotoluene.

Methylnitrobenzol. See Nitrotoluene.

Methyl-para-aminophenol*

$\text{CH}_3\text{C}_6\text{H}_4\text{OHNHCH}_2\text{CO}_2\text{H}$.

Color and properties: Colorless

needles; poisonous; solutions have irritating effect on the skin.

Constants: Melting-point 184°C .

Soluble in water, alcohol and ether.

Derivation: (a) By the interaction of hydroquinone and methylamine. (b)

By the methylation of para-aminophenol hydrochloride.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Organic synthesis; photographic developer.

Fire hazard: None.

Railroad shipping regulations: None.

Methyl-para-oxybenzaldehyde. See Anisic aldehyde.

Methylphenylformic Acid. See Acid toluic, Ortho-.

Methylpropylphenol. See Thymol.

Methylpropylphenyl Hexahydride. See Menthol.

Methylprotocatechuic Aldehyde. See Vanillin.

Methylquinoline. See Lepidine.

Methylquinoline, Alpha-. See Quinaldine.

Methylresorcinol. See Orcin, page 507.

Methyl Salicylate* (Artificial wintergreen oil) $\text{OHC}_6\text{H}_4\text{CO}_2\text{C}_2\text{H}_5$.

Color and properties: Colorless, liquid oil; odor of wintergreen.

Constants: Specific gravity 1.1850; melting-point -8.3°C ; boiling-point 222.2°C .

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By heating methyl alcohol and salicylic acid in presence of sulfuric acid, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums; glass bottles.

Uses: Medicine; liniments; extracts; flavoring; confectionery.

Fire hazard: None.

Railroad shipping regulations: None.

Methylstyryl Ketone. See Benzylideneacetone.

Methylsuccinic Acid. See Acid pyrotartatic.

Methyl Sulfate. See Dimethyl sulfate.

Methyl Sulfide* (Methanethiomethane; Dimethyl sulfide) $(\text{CH}_3)_2\text{S}$.

Color and properties: Colorless liquid; disagreeable odor.

Constants: Specific gravity 0.845°C ; melting-point -83.2°C ; boiling-point 37.5°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of a methyl alcohol solution of potassium sulfide and methyl chloride, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Steel drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Methyltheobromine. See Caffeine.

Methylthioninæ Chloridum, U. S. P. Methylthionine chloride.

Methylene Bichloride. See Methylene chloride.

Methylene Chloride* (Methylene bichloride; Dichloromethane) CH_2Cl_2 .

Color and properties: Colorless, volatile liquid; poisonous when inhaled.

Constants: Specific gravity 1.2615; melting-point -97°C ; boiling-point 42°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By the chlorination of methyl chloride and subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic synthesis; local anesthetic.

Fire hazard: None.

Railroad shipping regulations: None.

Methylenediantipyrine. See Formopyrine.

Methylenedimethylate. See Methylal.

Methylenedimethyl Ester. See Methylal.

Methylene Iodide* (Diiodomethane)

CH_2I_2 .

Color and properties: Yellow liquid.

Constants: Specific gravity 3.33; melting-point 4°C .; boiling-point 186°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating iodoform with an alcoholic solution of sodium acetate and subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Steel drums; glass bottles.

Uses: Separating mixtures of minerals; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Methylis Salicylas, U. S. P., B. P. See Methyl salicylate.

Metol.* The trade name for monomethyl-para-aminophenol hydrochloride or monomethyl-para-amino-meta-cresol sulfate, a photographic developer.

Metozin. See Antipyrine.

Mexican Scammony Root. See Jalap, Orizabo.

Mezereon. See Mezereum.

Mezereum* (Mezereon; Olive spurge; Dwarf bay; Magell; Paradise plant; Spurge flax; Wild pepper).

Derivation: Dried bark of *Daphne mezereum* and other European species of *Daphne*.

Habitat: Mountainous Europe, Siberia, Canada and New England.

Grades: Technical; U. S. P.

Containers: Bales.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Mica. A natural, hydrous silicate, having a very fine basal cleavage which renders it capable of being split into thin tough transparent plates. Used as an insulator in electrical equipment; lubricants; stove doors. The most common varieties are muscovite and biotite. Phlogopite and lepidolite are prominent locally.

Michler's Ketone* (Tetramethyldiaminobenzophenone)

$(\text{CH}_3)_2\text{N} \cdot \text{C}_6\text{H}_4 \cdot \text{CO} \cdot \text{C}_6\text{H}_4 \cdot \text{N}(\text{CH}_3)_2$.

Color and properties: Colorless, crystalline plates.

Constants: Melting-point 174°C .

Soluble in alcohol; insoluble in water.

Derivation: Carbonyl chloride is passed into dimethylaniline at ordinary temperature, until the latter has increased 40 per cent in weight and the mixture heated until the reaction is completed.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Microcosmic Salt. Sodium-ammonium phosphate.

Mignonette Oil. See Reseda oil, page 508.

Milk of Lime. Calcium hydroxide solution.

Milk of Magnesia. Magnesium hydroxide solution.

Milk of Sulfur. See Sulfur.

Milk Sugar* (Lactose; *Saccharum lactis*)

$\text{C}_{12}\text{H}_{22}\text{O}_{11} \cdot \text{H}_2\text{O}$.

Color and properties: Impalpable, white powder; sweet taste.

- Constants:** Specific gravity 1.525; melt-point: Decomposes at 203.5° C.
Soluble in water; insoluble in alcohol and ether.
Derivation: From whey, by concentration and crystallization.
Method of purification: Recrystallization.
Grades: Technical; U. S. P.; B. P.
Containers: Tins.
Uses: Pharmacy; infant foods; medicine.
Fire hazard: None.
Railroad shipping regulations: None.
- Millerite.** Natural nickel sulfide, NiS. Contains 64.1 per cent nickel. California and Pennsylvania
- Millstone** (Burrstone). A hard, tough stone used for grinding cereals, cement rocks and other materials. Usually a coarse-grained sandstone or fine quartz conglomerate. Alabama, Canada, Georgia, Mississippi, New York, North Carolina, Ohio, Pennsylvania and Virginia.
- Mimetite.** Natural lead chloroarsenate, $3\text{Pb}_3\text{As}_2\text{O}_8 \cdot \text{PbCl}_2$. California, Colorado and Nevada.
- Mimose.** See Wattle.
- Mineral Blue.** See Ferric ferrocyanide.
- Mineral Butter.** See Antimony chloride.
- Mineral Carbon.** See Graphite.
- Mineral Fat.** See Petrolatum.
- Mineral Green.** See Copper carbonate.
- Mineral Oil.** See Petroleum.
- Mineral Paint.** Minerals used as pigment, including the ochers, iron oxides, barite, etc. See also Ocher, Sienna, Umber. Alabama, Arizona, California, Canada, Connecticut, Florida, Georgia, Indiana, Iowa, Kentucky, Massachusetts, Minnesota, Missouri, New York, Oregon, Pennsylvania, Tennessee, Washington and Wyoming.
- Mineral Pitch.** See Asphalt.
- Mineral Rubber.** See Gilsonite, Grahamite, etc.
- Mineral Wax.** See Ozokerite and Ceresin.
- Mineral Wool.** See page 506.
- Minium.** Natural red oxide of lead, $2\text{PbO} \cdot \text{PbO}_2$. Contains 90.6 per cent lead. Colorado.
See also Lead oxide, Red.
- Mirabilite** (Glauber's salt). Natural, hydrous sodium sulfate, $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$. Arizona, Oregon and Wyoming.
- Mirbane Essence.** See Nitrobenzene.
- Mirbane Oil.** See Nitrobenzene.
- "Misch-Metall."*** The mixture of cerium metals obtained from monazite sand, used for manufacturing ferrocerium, etc.
- Mispickel.** See Arsenopyrite.
- Mistura Cretæ, U. S. P., B. P.** Chalk mixture.
- Mistura Glycyrrizæ Composita, U. S. P.** Compound mixture of glycyrrhiza.
- Mixed Acid.** See Acid, Mixed.
- Moellen Degras.** See Degras, Moellen.
- Mohr's Salt.** See Ferrous-ammonium sulfate.
- Mollin.***
Derivation: A potash soap from coconut oil, containing about 17 per cent of uncombined fatty acids with glycerin.
Color and properties: Yellowish-white, smooth, soft, ointment-like mass; does not become rancid.
Soluble in water.

Grades: Technical.
Containers: Tins; wooden kegs.
Uses: Ointment base.
Fire hazard: None.
Railroad shipping regulations: None.

Molucca Grains. See Tiglium, page 510.

Molybdenite. Natural molybdenum sulfide, MoS_2 . Contains 60 per cent molybdenum. Arizona, California, Colorado, Maine, Montana, Nevada, New Mexico, Ontario, Quebec, Utah and Washington.
Uses: This ore, concentrated, serves as raw material for ferro-molybdenum, molybdic acid and various molybdenum salts.

Molybdenum* Mo.
Color and properties: Gray metal or black powder; of wide but not abundant distribution. See Molybdenite and Wulfenite.
Constants: Specific gravity 8.56.
Soluble in acids; insoluble in water.
Derivation: By aluminothermic reduction of molybdic acid.
Grades: Technical.
Containers: Wooden barrels.
Uses: Metallurgy; molybdenum compounds.
Fire hazard: None.
Railroad shipping regulations: None.

Molybdenum Anhydride. See Acid molybdic.

Molybdenum, Ferro. See Ferro-molybdenum.

Molybdenum Trioxide. See Acid molybdic.

Molybdic Acid. See Acid molybdic.

Monarda Oil. See Horsemint oil.

Monazite. A natural phosphate of the cerium metals (cerium, didymium, lanthanum) and other rare-earth metals, including thorium, which alone gives it commercial value. Some varieties carry

no thorium, but others carry as much as 18 per cent thorium oxide. The source of thorium for the incandescent gas-mantle industry, and of cerium for the production of pyrophoric alloys. Colorado, Connecticut, Idaho, Montana, Nevada, New Mexico, North Carolina, Oregon, South Carolina, Utah, Virginia, Washington, Wyoming and Brazil.

Monel Metal.* An alloy of: Nickel, 67 per cent; Copper, 28 per cent; Cobalt and iron, 5 per cent.
Uses: Acid resisting chemical equipment; cooking apparatus; marine engineering; filter cloth; screens; etc.

Monesia (Buranhem; Guaranham).
Derivation: Bark of *Chrysophyllum glyciphloeum*.
Habitat: Brazil.
Grades: Technical.
Containers: Bales.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Monk's-hood. See Aconite.

Mono Acid F. See Acid Beta-naphthylaminemonosulfonic. 27.

Monoacetin. See Acetin.

Monobromoacetic Acid. See Acid monobromoacetic.

Monobromo-alpha-naphthalene*
 $\text{C}_{10}\text{H}_7\text{Br}$.
Color and properties: Yellowish crystals.
Constants: Specific gravity 1.4870; melting-point 6.20°C .; boiling-point 279.5°C .
Soluble in alcohol, ether and benzol; insoluble in water.
Derivation: By the direct bromination of naphthalene.
Grades: Technical.
Containers: Wooden barrels.
Uses: Organic synthesis.

Fire hazard: None.
Railroad shipping regulations: None.

Monobromobenzene. See Bromobenzene, page 503.

Monobromobenzoic Acid, Para- See Acid monobromobenzoic, Para-

Monobromobenzol. See Bromobenzene, page 503.

Monobromobutyric Acid, Alpha- See Acid monobromobutyric, Alpha-

Monobromoethane. See Ethyl bromide.

Monobromonaphthalene, Alpha-*

$C_{10}H_7Br$.

Color and properties: Yellow liquid.

Constants: Specific gravity 1.4870; melting-point $6.2^{\circ}C$; boiling-point $279^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By the bromination of naphthalene.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Monobromopropionic Acid. See Acid monobromopropionic.

Monobromosuccinic Acid. See Acid monobromosuccinic.

Monocalcium Ortho-phosphate. See Calcium phosphate, Monobasic.

Monocalcium Phosphate. See Calcium phosphate, Monobasic.

Monochlorated Acetone. See Chloroacetone.

Monochlorinated Dutch Liquid. See Ethylene monochlorochloride.

Monochloroacetic Acid. See Acid monochloroacetic.

Monochloroacetone. See Chloroacetone.

Monochlorobenzene. See Chlorobenzene.

Monochlorobenzol. See Chlorobenzene.

Monochloroethane. See Ethyl chloride.

Monochloroethylene Chloride. See Ethylene chloride.

Monochlorohydrin* (Alpha-propylenechlorohydrin; Asymmetric propylene chlorohydrin; Chloropropyleneglycol) $CH_2Cl.CH(OH)CH_2(OH)$.

Color and properties: Yellowish, sirupy liquid.

Constants: Specific gravity 1.325.

Soluble in water, alcohol and ether.

Derivation: By the action of hydrochloric acid on glycerine.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Monoethylaniline. See Ethylaniline.

Monoethyl Sulfate. See Acid ethylsulfuric.

Monoiodoethane. See Ethyl iodide.

Monol. See Calcium permanganate.

Monomagnesium Phosphate. See Magnesium biphosphate.

Monomethylaniline. See Methylaniline.

Monomethylcatechol. See Guaiacol.

Mononitronaphthalene. See Nitronaphthalene, Alpha-

Mononitrotoluene. See Nitrotoluene.

Mononitrotoluol. See Nitrotoluene.

Mononitroxylene. See Nitroxylene.

Mononitroxylol. See Nitroxylene.

Mono-para-bromobenzoic Acid. See Acid monobromobenzoic, Para.

Monosodium Ortho-phosphate. See Sodium phosphate, Monobasic.

Monosulfonic Acid F. See Acid betanaphthylaminemonosulfonic. 2-7.

Monsel's Salt. See Ferric sulfate, Basic.

Monsel's Solution. See Ferric sulfate, Basic.

Montan Wax.

Color and properties: Crude; dark-brown; refined: White, semi-soft wax.

Soluble in carbon tetrachloride, benzol and chloroform.

Derivation: By extraction of lignites from Saxony and Thuringia.

Method of purification: Distillation with superheated steam.

Grades: Crude; refined.

Containers: Bags.

Uses: Substitute for carnauba wax.

Fire hazard: None.

Railroad shipping regulations: None.

Montroydite. Natural oxide of mercury, HgO. Texas.

Moonstone. A variety of feldspar, commonly transparent or translucent orthoclase, albite or labradorite, which exhibits a delicate pearly opalescent play of colors. Pennsylvania, Virginia

Morphia. See Morphine.

Morphina, U. S. P. See Morphine.

Morphinæ Acetas, U. S. P., B. P. See Morphine acetate.

Morphinæ Hydrochloridum, U. S. P., B. P. See Morphine hydrochloride.

Morphinæ Sulfas, U. S. P. See Morphine sulfate.

Morphine* (Morphia)

$C_{17}H_{19}NO_8 \cdot H_2O$.

Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point $254^{\circ}C$.

Slightly soluble in water, alcohol and ether.

Derivation: From opium by extraction and crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Morphine Acetate*

$C_{17}H_{19}NO_8 \cdot C_2H_4O_2 \cdot 3H_2O$.

Color and properties: White, crystalline or amorphous powder; poisonous.

Constants: Melting-point $200^{\circ}C$.

Soluble in water and alcohol; insoluble

in ether.

Derivation: By heating morphine and acetic acid in presence of sulfuric acid.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Morphine Bimeconate. See Morphine meconate.

Morphine Hydrochloride* (Morphine muriate) $C_{17}H_{19}NO_8 \cdot HCl \cdot 3H_2O$.

Color and properties: Micro-crystalline needles; poisonous.

Constants: Melting-point $250^{\circ}C$.

Soluble in water and alcohol; insoluble in ether.

Derivation: By the action of hydrochloric acid on morphine.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Morphine Meconate* (Morphine bimeconate)

$(C_{17}H_{19}NO_8)_2 \cdot C_7H_4O_7 \cdot 5H_2O$.

Color and properties: Yellowish-white, crystalline powder; poisonous.

Soluble in water and alcohol.

Derivation: From opium by extraction.

Method of purification: Crystallization.

Grades: Technical.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Morphine Muriate. See Morphine hydrochloride.

Morphine Nitrate* $C_{17}H_{19}NO_3 \cdot HNO_3$.

Color and properties: White powder; darkens when exposed to light; poisonous.

Soluble in water.

Derivation: By the action of nitric acid on morphine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Boxes; amber glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Morphine Sulfate*

$(C_{17}H_{19}NO_3)_2 \cdot H_2SO_4 \cdot 5H_2O$.

Color and properties: Acicular crystals or cubical masses; poisonous.

Constants: Melting-point $250^\circ C$.

Soluble in water; slightly soluble in alcohol; insoluble in ether.

Derivation: By the action of sulfuric acid on morphine.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Boxes; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Morus Tinctoria (Old fustic; Yellow Brazil wood).

Derivation: Yellow dyewood from *Morus tinctoria*.

Habitat: South America, Central America and Cuba.

Grades: Technical.

Containers: Bags.

Uses: Dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Mosaic Gold. See Stannic sulfide.

Moschus, U. S. P. See Musk.

Mosoi Flower Oil. See Cananga oil.

Motor Spirit. See Gasoline.

Mountain Balm. See Eriodictyon.

Mountain Blue.*

Derivation: The mineral azurite, in ground form.

Grades: Technical.

Containers: Kegs; boxes.

Uses: Paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Mountain Brown Ore. A local name for limonite or brown iron ore. Applied in Virginia to the low-grade, siliceous variety, which commonly occurs in hard lumps and which is found on the mountain slopes at or near the contact of the Cambrian shale and sandstone with the Cambro-Ordovician limestone. See Valley brown ore Virginia.

Mountain Green* (Mineral green)

Derivation: The mineral malachite in ground form.

Grades: Technical.

Containers: Kegs; boxes.

Uses: Paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Mowra Oil.

Color and properties: Yellow, semi-liquid fat; bitter, aromatic taste; characteristic odor similar to that of cacao beans.

Soluble in ether, chloroform, benzene and carbon bisulfide.

Constants: Specific gravity 0.894-0.898; melting-point 23° - $29^\circ C$; saponification value 188-194; iodine value 58-67.

Derivation. From the seeds of *Bassia latifolia*.

Habitat: India (Northern Provinces).

Grades: Crude; refined.

Containers: Wooden barrels.

Uses: Soaps.

Fire hazard: None.

Railroad shipping regulations: None.

Mucic Acid. See Acid mucic.

Mucilago Acaciæ, U. S. P., B. P. Mucilage of acacia. See Gum arabic.

Mucilago Tragacanthæ, U. S. P., B. P. Mucilage of tragacanth. See Gum tragacanth.

Mungo. Another term for shoddy

Muriates. See chlorides or hydrochlorides of the respective metals, bases, alkaloids, etc.

Muriatic Acid. See Acid hydrochloric.

Murillo Bark. See Quillaja.

Muscle Fibrin. See Syntonin.

Muscovite. White, potash-bearing mica, $H_2KAl_3(SiO_4)_8$. See Mica. Alabama, Arizona, Arkansas, Canada, New York and Wyoming.

Musk.

Derivation: Dried secretion from preputial follicles of the musk ox, *Moschus moschiferus*.

Habitat: Northern Asia; Tonquin and Thibet.

Grades: Technical; U. S. P.

Containers: Metal boxes.

Uses: Medicine; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Musk-root. See Sumbul.

Mustard. See *Sinapis nigra* and *S. alba*

Mustaro Gus. See Dichlorodiethyl sulfide.

Mustard Oil, Artificial* (Allyl isothiocyanate; Allyl mustard oil) C_8H_5CNS . A military poison gas used in the late war.

Mustard Oil, Black. See Mustard oil, Volatile.

Mustard Oil, Volatile (Black mustard oil; Oleum sinapis volatile).

Color and properties: A colorless or pale-yellow, limpid liquid; very pungent, acrid odor and taste.

Chief known constituents: Allyl isothiocyanate; allyl thiocarbimide.

Constants: Specific gravity 1.018 to 1.029; boiling-point $148^\circ-150^\circ C$.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: From black mustard seed, *Brassica nigra*, by maceration with water and subsequent distillation.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Copper flasks; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Muthmann's Liquid. See Acetylene tetrabromide.

Mylabris (Chinese cantharides; Chinese blistering flies).

Derivation: The dried insect, *Mylabris cichorii*.

Habitat: China and Eastern India.

Grades: Technical.

Containers: Boxes.

Uses: Medicine; hair tonics.

Fire hazard: None.

Railroad shipping regulations: None.

Myrabolans.

Derivation: The dried fruit of certain Indian and Chinese trees: *Myrabolanus chebula*. They appear in commerce as dried and shrivelled nuts about an inch long, containing 30 per cent tannin.

Grades: Solid, 50 per cent tannin. Extract, 25 per cent tannin.

Containers: Dry; Burlap bags. Extract: Wooden barrels.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Myrbane Oil. See Nitrobenzene.

Myrcia Oil (Bay-berry oil).

Color and properties: A yellow or brownish-yellowish liquid; aromatic, somewhat clove-like odor; pungent, spicy taste.

Chief known constituents: Terpenes, eugenol, methylester of eugenol, di-terpene.

Constants: Specific gravity 0.965 to 0.985.

Soluble in alcohol and ether.

Derivation: Distilled from the leaves of *Myrcia acris*.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Copper flasks; glass bottles.

Uses: Perfumery; medicine; bay-rum.

Fire hazard: None.

Railroad shipping regulations: None.

Myrica* (Candleberry; Bayberry; Wax myrtle; Wax berry; Tallow shrub).

Derivation: Bark of *Myrica cerifera*.

Habitat: Maryland to Florida, west to Texas and Arkansas.

Grades: Technical.

Containers: Bales.

Uses: Medicine; source of bayberry wax.

Fire hazard: None.

Railroad shipping regulations: None.

Myristica* (Nutmeg; *Nux moschata*; *Nuces nucistæ*).

Derivation: Kernel of the ripe seed of *Myristica fragrans*.

Habitat: Southern Asia and Moluccas, cultivated in many tropical countries.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Myrrh.

Derivation: The gum-resin of *Commiphora myrrha*.

Habitat: Nubia, Somaliland and Arabia.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine; dentrifices.

Fire hazard: None.

Railroad shipping regulations: None.

Myrrh Oil.

Color and properties: Yellowish, rather viscid liquid; strong odor.

Chief constituents: Cuminic aldehyde, eugenol, metacresol, pinene and dipentene.

Constants: Specific gravity 0.988 to 1.007; boiling-point 220°-235°C.

Soluble in alcohol and ether.

Derivation: Distilled from the gum-resin, Myrrh.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Medicine; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Myrrha, U. S. P., B. P. See Myrrh.

Myrtle Oil, Spanish.

Color and properties: Light, yellow liquid; agreeable aromatic odor.

Chief known constituents: Cineol, dextro-pinene; dipentene.

Constants: Specific gravity 0.89 to 0.92; optical rotation +10 to +30.

Soluble in alcohol and ether.

Derivation: Distilled from the leaves of *Myrtle communis*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

N

Naegeli's Solution. See Zinc chloroiodide, Solution.

Nagyagite. A sulfotelluride of lead, gold and antimony, possibly having the formula, $\text{Au}_2\text{Pb}_{14}\text{Sb}_3\text{Te}_7\text{S}_{17}$, containing up to 11 per cent of silver and found in North Carolina.

Nankin Yellow. See Iron buff.

Naphtha, Heavy.*

Color and properties: Deep amber to dark red liquid; a mixture of xylol and higher homologs, from coal-tar; inflammable.

Constants: Specific gravity 0.925-0.950; boiling-point $160^\circ\text{--}220^\circ\text{C}$. (about 70 per cent at 200°C .); flash-point: About 78.3°C .; evaporation 303 minutes.

Derivation: (a) From coal-tar by fractional distillation. (b) From illuminating gas by scrubbing and distilling the resulting oil.

Grades: Technical.

Containers: Drums; tank-cars.

Uses: Para-coumarone resins; solvent for dark colored paints; solvent for asphalts, etc., in saturating asbestos-board, brake-linings and the like.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Naphtha, "Hi-Flash."*

Color and properties: Water-white, volatile, mobile, inflammable liquid.

Constants: Specific gravity 0.870-0.880; boiling-point $150^\circ\text{--}200^\circ\text{C}$.; flash-point: Not below 37.8°C .; evaporation 205 minutes.

Derivation: A solvent naphtha, from coal-tar or illuminating gas.

Grades: Water-white.

Containers: Iron drums; tank cars.

Uses: Solvent.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Naphtha, Petroleum. See Benzine.

Naphtha, Solvent* (160° Benzol).

Color and properties: A mixture of small quantities of benzol and toluol with xylol and higher homologs, from coal-tar. (a) Crude: Dark straw colored liquid; inflammable. (b) Refined: Water-white liquid; inflammable.

| | | |
|------------------|--------------------------------------|--------------------------------------|
| Constants: | (a) | (b) |
| Specific gravity | 0.862-0.892 | 0.862-0.872 |
| Boiling-point | About 160°C . (80%) | About 160°C . (90%) |
| Flash-point | About 25.6°C . | About 25.6°C . |

Evaporation 200 on metal surface $3\frac{1}{2}''$ square: (a) 107 minutes; (b) 121 minutes.

Derivation: (a) From coal-tar by fractional distillation. (b) From illuminating gas by scrubbing and distilling the resulting oil.

Grades: Dark straw; water-white.

Containers: Iron drums; tank cars.

Uses: Solvent; xylol; cumol.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label

Naphthalene* (Tar camphor; Naphthalin; White tar) C_{10}H_8 .

Color and properties: White, crystalline, volatile flakes; strong coal-tar odor.

Constants: Specific gravity 1.145; melting-point 80.05°C .; boiling-point 217.06°C .

Soluble in benzol, absolute alcohol and ether; insoluble in water.

Derivation: (a) From the coal-tar oils boiling between 170° and 230°C ., by cooling the oils in large tanks. (b) From illuminating gas mains, as such.

Method of purification: The crude crystals are purified by hydraulic pressing or by centrifuging and by treatment with sulfuric acid followed by sublimation.

Impurities: Coal-tar oils.

Grades: Flakes; balls; blocks; cubes; grains (rice); powder crushed; tablets; crude.

Containers: Wooden boxes; barrels.

Uses: Moth repellent; insecticide; phthalic acid; dyestuff intermediates; addition to motor spirit; lampblack;

- celluloid as camphor substitute; medicine.
 Fire hazard: Dangerous.
 Railroad shipping regulations: None.
- Naphthalene, Para-**. See Anthracene.
- Naphthalenesulfonic Acid**. See Acid naphthalenesulfonic.
- Naphthalenesulfonic Acid, Beta-**. See Acid naphthalenesulfonic, Beta-.
- Naphthalic Acid**. See Acid phthalic.
- Naphthalin**. See Naphthalene.
- Naphthaquinoneoxime**. See Nitroso-naphthol.
- Naphthenes**. Saturated hydrocarbons, generally derivatives of cyclopentane (C_5H_{10}) or cyclohexane (C_6H_{12}), occurring in mixture in petroleum of various origins. Baku petroleum consists of 80 per cent of naphthenes. Galician petroleum contains considerable amounts.
- Naphthionic Acid**. See Acid alpha-naphthylaminesulfonic.
- Naphthol, B. P.** See Naphthol, Beta-.
- Naphthol, Alpha-*** ($C_{10}H_7OH$).
 Color and properties: Colorless prisms or powder; disagreeable taste.
 Constants: Specific gravity 1.224; melting-point $94.2^\circ C$; boiling-point $278^\circ C$.
 Soluble in benzol, alcohol and ether; slightly soluble in water.
 Derivation: By fusing alpha-naphthalenesulfonate and caustic soda. The melt is decomposed with hydrochloric acid and distilled.
 Method of purification: Redistillation.
 Impurities: Beta-naphthol.
 Grades: Technical; pure.
 Containers: Wooden barrels; kegs.
 Uses: Dyestuffs; organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Naphthol, Beta-*** $C_{10}H_7OH$.
 Color and properties: White, lustrous, bulky scales; darken with age.
 Constants: Specific gravity 1.217; melting-point $121.6^\circ C$; boiling-point $285^\circ C$.
 Soluble in alcohol, ether, chloroform, benzol, oils and alkaline solutions; slightly soluble in water.
 Derivation: By fusing sodium beta-naphthalenesulfonate with caustic soda. The product is distilled in vacuo.
 Method of purification: Sublimation.
 Grades: Technical; U. S. P.; B. P.
 Containers: Wooden barrels; kegs.
 Uses: Medicine; organic synthesis; dyestuffs.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Naphthol Benzoate, Beta-*** (Benzoyl-naphthol; Benzonaphthol) $C_{10}H_7CO_2C_6H_5$.
 Color and properties: Whitish powder.
 Constants: Melting-point $107^\circ C$.
 Soluble in hot alcohol; slightly soluble in ether; insoluble in water.
 Derivation: By fusing equal parts of beta-naphthol and benzoyl chloride.
 Grades: Technical; B. P.
 Containers: Wooden barrels; kegs.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Naphtholmethyl Ether, Beta-*** (Nerolin; Yara-yara) $C_{10}H_7OCH_3$.
 Color and properties: White, crystalline scales.
 Constants: Melting-point $72^\circ C$; boiling-point $274^\circ C$.
 Soluble in alcohol and ether; insoluble in water.
 Derivation: (a) By heating beta-naphthol and methyl alcohol in presence of sulfuric acid. (b) By methylating beta-naphthol with dimethyl sulfate.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Tins.
 Uses: Perfumery.
 Fire hazard: None.
 Railroad shipping regulations: None.
- Naphtholsulfonic Acid, Beta-**. See Acids beta-naphtholsulfonic.
- Naphthylamine, Alpha-*** ($C_{10}H_7NH_2$).
 Color and properties: White crystals.
 Constants: Specific gravity 1.223;

melting-point 50°C.; boiling-point 301°C.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By the reduction of alpha-nitronaphthalene with iron and hydrochloric acid. The mass is then mixed with milk of lime and distilled.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Naphthylamine Hydrochloride, Alpha-*

$C_{10}H_7NH_2 \cdot HCl$.

Color and properties: White to gray, crystalline powder.

Soluble in water, alcohol and ether.

Derivation: By the action of hydrochloric acid on alpha-naphthylamine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Naphthylenediamine. See Diaminonaphthalene.

Naphthylmethyl Ether, Beta-*

$C_{10}H_7OCH_3$.

Color and properties: Colorless liquid; aromatic odor.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of methyl alcohol and beta-naphthol in presence of sulfuric acid, with subsequent distillation.

Method of purification: Rectification.

Grades: Technical.

Containers: Tin cans.

Uses: Synthetic perfumes; flavors.

Fire hazard: None.

Railroad shipping regulations: None.

Naples Yellow. See Lead antimonate.

Napus (Rape).

Derivation: Flowers and seeds of Brassica napus.

Habitat: Europe.

Grades: Technical.

Containers: Bags.

Uses: Source of rape-seed oil.

Fire hazard: None.

Railroad shipping regulations: None.

Narcein. An azo dyestuff.

Native Paraffin. See Ozokerite.

Sodium. The Latin name for sodium, hence the symbol Na in chemical nomenclature.

Natron. See Sodium carbonate.

Natural Gas. A mixture of gaseous hydrocarbons found in nature, usually in association with deposits of petroleum. Used as fuel, for the recovery of gasoline and helium which it contains, and for manufacture of carbon-black.

Neats-foot Oil* (Oleum bubulum).

Color and properties: A fixed, pale yellow oil extracted from the feet of neat (bovine) cattle.

Constants: Specific gravity 0.916; saponification value 194-199; iodine value 70.

Soluble in alcohol, ether, chloroform and kerosene.

Derivation: By boiling the feet and shin-bones of cattle in water.

Impurities: Bone oil; marrow fat.

Adulterants: Rape, cotton-seed, fish and mineral oils.

Grades 20°; 30°; 40°F.; cold test, being the temperature in degrees F. at which stearine separates.

Containers: Wooden barrels.

Uses: Leather industry for "fat liquoring"; waterproofing and softening leather; lubricant.

Fire hazard: None.

Railroad shipping regulations: None.

Neoarsaminol. A proprietary name for salvarsan.

Neoarsphenamine. A proprietary name for salvarsan.

Neodiarsenol. A proprietary name for salvarsan.

Neodymium. See page 506.

Neosaccharin. See Saccharin.

Nephrite. See Jade.

Neradol.*

Color and properties: Dark brown liquid.

Derivation: Soluble phenol or cresol-formaldehyde condensation products used in conjunction with other tanning extracts in the tanning industry.

Grades: Technical.

Containers: Barrels.

Uses: Leather tanning

Fire hazard: None

Railroad shipping regulations: None.

Neroli Oil.*

Color and properties. A slightly dextrogyrate essential, reddish yellow colored oil. There are several varieties from various species of orange blossoms, from the petals alone, or from the leaves and unripe fruit.

Chief constituents. Linalyl acetate, linalol, geraniol, methyl anthranilate and limonene.

Constants. Specific gravity 0.870-0.880. Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the flowers of *Citrus aurantium vulgaris* or *Citrus bygaradia*

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Perfumes; flavoring

Fire hazard: None.

Railroad shipping regulations: None.

See also Orange Oil

Nerolin. See Naphtholmethyl ether, Beta.

Nerve Root. See *Cypripedium*.

Nessler's Reagent. Solution of mercuric iodide in potassium iodide, used in detecting the presence of ammonia, particularly in very small amounts.

"Neutral Alum."*

Derivation: By adding sodium or potassium carbonate or caustic soda to an alum solution.

Uses: In mordanting, because of the readiness with which it deposits aluminum hydroxide on the fiber.

"Neutral Oils." Light petroleum or refined coal-tar oils.

Neville and Winther's Acid. See Acid alpha-naphtholsulfonic. 1:4.

Niccofite. Native nickel arsenide, NiAs, found in Canada and Colorado, containing 44 per cent of nickel.

Nicholsonite. A variety of the mineral aragonite, CaCO_3 , containing from less than 1 to 10 per cent of zinc. Found in Colorado.

"Nichrome."* A nickel-chromium alloy, used for electric resistances, heat and acid-resisting apparatus.

Nickel* Ni

Color and properties: Very hard, silvery metal, with a faint tinge of yellow; takes a high polish.

Constants: Specific gravity 8.63; melting-point 1450°C .

Soluble in dilute mineral acids; insoluble in water.

Derivation: (a) Matte process. The ore is roasted and smelted in a blast-furnace to obtain the matte, consisting of nickel, copper and iron sulfide. The latter is smelted in a converter to remove most of the iron. The matte is then smelted by the Orford process in a blast-furnace with salt-cake and coke. The resulting nickel sulfide is dead-roasted to nickel oxide and the latter reduced to metallic nickel by fusing in graphite crucibles with charcoal. (b) Mond process. The matte, nearly free from iron, produced as above, is dead-roasted, crushed and treated with warm, dilute sulfuric acid to remove the copper. The residue is reduced in a tower by means of water gas. (c) Browne electrolytic process. The copper-nickel matte is crushed, dead-roasted, reduced to metal in a reverberatory furnace and cast into anode plates. The latter are electrolyzed, the nickel going into the electrolyte solution. Any copper remaining in

the electrolyte is precipitated as sulfide, and the iron removed by means of caustic soda. The solution is now concentrated to allow sodium chloride to crystallize, and the hot solution of nickel chloride is electrolyzed. The nickel of commerce comes almost entirely from the Sudbury district in Ontario, Canada and from the French colony of New Caledonia.

Method of purification: Electrolytic refining.

Grades: Technical.

Containers: Ingots; freight cars.

Uses: Metallurgy; chemical apparatus; coins; alloys; nickel salts; nickel plating; surgical instruments; catalyst in hydrogenation of oils.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel-Ammonia Nitrate.*

$\text{Ni}(\text{NO}_3)_2 \cdot 4\text{NH}_3 \cdot 2\text{H}_2\text{O}$.

Color and properties: Green crystals.

Soluble in water; insoluble in alcohol.

Derivation: By adding ammonium hydroxide to a nitric acid solution of nickel nitrate, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles; wooden kegs.

Uses: Nickel plating.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel-Ammonium Sulfate*

$\text{NiSO}_4 \cdot (\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$.

Color and properties: Green crystals.

Constants: Specific gravity 1.929.

Soluble in water and ammonium sulfate solution.

Derivation: An aqueous solution of nickel sulfate is acidified with sulfuric acid, then an aqueous solution of ammonium sulfate is added. On concentrating, crystals of the double sulfate separate out.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Nickel electrolyte for electroplating.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Black. See Nickel peroxide.

Nickel Bromide* (Nickelous bromide)

(a) NiBr_2 (b) $\text{NiBr}_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: (a) Brownish-yellow solid or yellow, lustrous scales, (b) Deliquescent, greenish scales.

Constants: Specific gravity: (a) 4.64.

Melting-point: (a) Decomposes; (b)

Loses water of crystallization at about 200°C.

Soluble in water, alcohol, ether and ammonium hydroxide.

Derivation: By the action of hydrobromic acid on nickel oxide.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Bromide-Ammonia* $\text{NiBr}_2 \cdot 6\text{NH}_3$.

Color and properties: Violet powder.

Constants: Specific gravity 1.837.

Soluble in cold water; decomposed by hot water.

Derivation: By crystallizing anhydrous nickel bromide from ammonium hydroxide instead of water.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Carbonate* NiCO_3 .

Color and properties: Bluish-green crystals.

Constants: Melting-point: Decomposes.

Insoluble in water and acids.

Derivation: By the addition of sodium carbonate to a solution of nickel sulfate.

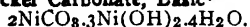
Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Electroplating.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Carbonate, Basic*

Color and properties: Green crystals.
 Constants: Melting-point: Decomposes.

Soluble in acids and solutions of ammonium salts; insoluble in water.

Derivation: By the addition of sodium carbonate to a solution of nickel sulfate.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Electroplating.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Carbonyl* (Nickel tetracarbonyl)

Color and properties: Colorless, volatile liquid; poisonous; inflammable.

Constants: Specific gravity 1.3185; melting-point $-25^\circ\text{C}.$; boiling-point $43^\circ\text{C}.$; vapor explodes at $60^\circ\text{C}.$

Soluble in alcohol and concentrated nitric acid; insoluble in water.

Derivation: By passing carbon monoxide gas over finely divided nickel.

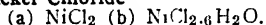
Grades: Technical.

Containers: Iron drums.

Uses: For production of metallic nickel by Mond process.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Nickel Chloride*

Color and properties: (a) Yellow scales; deliquescent in moist air. (b) Green scales; deliquescent in moist air.

Constants: Specific gravity: (a) 2.56; melting-point: Sublimes.

Soluble in water and ammonium hydroxide.

Derivation: By the action of hydrochloric acid on nickel oxides.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Nickel plating cast zinc; manufacture of sympathetic ink, antiseptic; absorbent for ammonia gas in military and industrial gas masks.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Cyanide* $\text{Ni(CN)}_2 \cdot 4\text{H}_2\text{O}.$

Color and properties: Apple-green plates or powder; poisonous.

Constants: Melting-point: Loses $4\text{H}_2\text{O}$ at $200^\circ\text{C}.$; boiling-point: Decomposes.

Soluble in ammonium hydroxide and potassium cyanide solution; insoluble in water and acids.

Derivation: By adding potassium cyanide to a solution of a nickel salt.

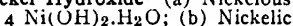
Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Metallurgy, electroplating.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Glance. Natural nickel-arsenic sulfide, $\text{NiAsS}.$ **Nickel Hydroxide* (a) Nickelous**

Color and properties: (a) Pale green powder. (b) Black powder.

Constants: Specific gravity: (a) 4.36. Melting-point: (a) Decomposes; (b) Decomposes.

(a) Soluble in acids, ammonium hydroxide and alcohol; insoluble in water and alkalis.

Derivation: (a) By adding caustic soda to a solution of nickel salt. (b) By adding a hypochlorite to a solution of a nickel salt.

Containers: Wooden kegs; glass bottles.

Grades: Technical.

Uses: Nickel salts.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Monoxide* (Nickelous oxide; Nickel protoxide; Green nickel oxide) $\text{NiO}.$

Color and properties: Green powder, becoming yellow; is found in nature as the mineral bunsenite.

Constants: Specific gravity 6.6-6.8; melting-point: Absorbs oxygen at $400^\circ\text{C}.$ and is reduced to NiO at $600^\circ\text{C}.$

Soluble in acids and ammonium hydroxide; insoluble in water.

Derivation: By heating nickel hydroxide or nitrate.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Nickel salts; porcelain painting.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Nitrate* $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: Green, deliquescent crystals. Keep well stoppered.

Constants: Specific gravity 2.065; melting-point 56.7°C ; boiling-point 136.7°C .

Soluble in water and alcohol.

Derivation: By the action of nitric acid on nickel oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; wooden kegs.

Uses: Nickel plating.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Nickel Peroxide* (Nickelic oxide; Nickel sesquioxide; Black nickel oxide) Ni_2O_3 .

Color and properties: Gray-black powder.

Constants: Specific gravity 4.84; melting-point: Is reduced to NiO at 600°C .

Soluble in acids and ammonium hydroxide; insoluble in water.

Derivation: By gentle heating of the nitrate or chlorate.

Grades: Technical.

Containers: Tins.

Uses: Production of oxygen; storage batteries.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Nickel Sulfate* (a) NiSO_4 ; (b) $\text{NiSO}_4 \cdot 6\text{H}_2\text{O}$; (c) $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$.

Color and properties: (a) Yellow crystals; (b) Blue crystals; (c) Green crystals.

| Constants: | (a) | (b) | (c) |
|------------------|--|--|--|
| Specific gravity | 3.418 | 2.031 | 1.98 |
| Melting-point | Loses SO_3 at 840°C . | Loses $6\text{H}_2\text{O}$ at 280°C . | $98^\circ\text{--}100^\circ\text{C}$. |

All the sulfates are soluble in water; (b) and (c) are soluble in alcohol; (a) is insoluble in alcohol and ether.

Derivation: By the action of sulfuric acid on nickel oxide.

Grades: Technical.

Containers: Wooden kegs.

Uses: Nickel plating; mordant in dyeing and printing textiles; blackening zinc and brass.

Fire hazard: None.

Railroad shipping regulations: None.

Nickel Tetracarbonyl. See Nickel carbonyl.

Nicotine* (Beta-pyridyl-alpha-normal-methylpyrrolidine) $\text{C}_{10}\text{H}_{14}\text{N}_2$.

Color and properties: Alkaloid from tobacco; thick, water-white, laevorotatory oil, turning brown on exposure to the air; poisonous.

Constants: Specific gravity 1.00924; melting-point: Below 80°C ; boiling-point 246.7°C .

Soluble in water, alcohol, ether and oils.

Derivation: By distilling tobacco with milk of lime and extracting with ether.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; insecticide.

Fire hazard: None.

Railroad shipping regulations: None.

Nicotine Salts*

(a) Hydrochloride: $\text{C}_{10}\text{H}_{14}\text{N}_2 \cdot \text{HCl}$.

(b) Salicylate: $\text{C}_{10}\text{H}_{14}\text{N}_2 \cdot \text{C}_7\text{H}_6\text{O}_3$.

(c) Sulfate: $(\text{C}_{10}\text{H}_{14}\text{N}_2)_2 \cdot \text{H}_2\text{SO}_4$.

(d) Tartrate:

$\text{C}_{10}\text{H}_{14}\text{N}_2 \cdot 2\text{C}_4\text{H}_6\text{H}_6 \cdot 2\text{H}_2\text{O}$.

Color and properties: (a) Colorless oil; poisonous. (b) White crystals; poisonous. (c) White crystals; poisonous. (d) White plates; poisonous.

Constants. Melting-point: (b) 117.5°C .

All the salts are soluble in water, alcohol and ether.

Derivation: By the action of the respective acid on the alkaloid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Nicotinic Acid. See Acid nicotinic.

Nigella Sativa (Nutmeg flower; Small fennel flower; Black cumin; Black caraway).

Derivation: Seed of *Nigella sativa*.

Habitat: Germany and Mediterranean region.

Grades: Technical.

Containers: Bags.

Uses: Medicine; veterinary medicine: snuff.

Fire hazard: None.

Railroad shipping regulations: None.

Nigrite. A variety of asphalt mined at Soldier Summit, Utah, of unknown composition.

Nigrosine.* A class of blue or black dye-stuffs, some soluble in water, some in alcohol and some in oil, used in manufacture of ink and shoe-polish and in dyeing leather, wood, textiles, etc.

Niobium. See Columbium

Niter. See Potassium nitrate.

Niter Cake. See Sodium bisulfate.

Niter, Chili. See Sodium nitrate.

Niter, Cubic. See Sodium nitrate

Niton. See Radium emanation.

Nitramidine. A nitrocellulose or pyroxyline made from paper or cardboard

Nitraniline* (a) Meta-; (b) Ortho-; (c) Para-; $\text{NO}_2\text{C}_6\text{H}_4\text{NH}_2$.

Color and properties: (a) Yellow needles. (b) Orange-red needles. (c) Yellow needles.

| | | | |
|------------------|---------|--------|-------|
| Constants: | (a) | (b) | (c) |
| Specific gravity | 1.308 | 1.443 | 1.417 |
| Melting point | 111.8°C | 68.4°C | 148°C |
| Boiling-point | 285°C | ... | .... |

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: From aniline by nitration after acetylation, with subsequent removal of the acetyl group by hydrolysis.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: (a) Color test for pine wood.

(b) Has no commercial uses at present. (c) Production of para-nitraniline red.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Nitratine. See Sodium nitrate.

Nitrating Acid. See Acid, Nitrating.

Nitre. See Potassium nitrate.

Nitre Cake. See Sodium bisulfate.

Nitre, Chili. See Sodium nitrate.

Nitre, Cubic. See Sodium nitrate.

Nitric Acid. See Acid nitric.

Nitric Acid, Fuming. See Acid nitric, Fuming

Nitroacetanilide, Para.*

$\text{NO}_2\text{C}_6\text{H}_4\text{NHCOCH}_3$.

Color and properties: White crystals.

Constants: Melting-point 207°C.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By acetylating aniline, then nitrating.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Manufacture of para-nitraniline.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Nitroaniline. See Nitraniline.

Nitrobenzene* (Nitrobenzol; Oil of mirbane; Oil of myrbane; Essence of mirbane; Artificial oil of bitter almonds).

Color and properties: Bright yellow crystals or yellow, oily liquid; odor and taste of bitter almonds; poisonous.

Constants: Specific gravity 1.19867; melting-point 8.70°C .; boiling-point 210.85°C .

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: From benzol by nitrating with nitric acid.

Method of purification: By washing and distilling with steam, then redistilling.

Impurities: Unconverted benzol.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: In perfumery in place of essential oil of almonds; in manufacture of dust preventatives; raw material for manufacture of aniline, benzidine, quinoline, azobenzene, etc.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Nitrobenzoic Acids. See Acids nitrobenzoic, Meta-, Ortho- and Para-.

Nitrobenzol. See Nitrobenzene.

Nitrocellulose* (Gun cotton)

$\text{C}_6\text{H}_7\text{O}_5(\text{NO}_2)_3$.

Color and properties: Yellowish, amorphous lumps; usually trimnitrocellulose, containing small amounts of lower and higher nitrated celluloses; inflammable; explosive.

Constants: Specific gravity 0.1-0.3.

Soluble in a mixture of alcohol and ether; ethyl acetate; nitrobenzene; benzol; acetone; amyl acetate; etc. Insoluble in alcohol, water and ether.

Derivation: Hanks of cotton, free from impurities are nitrated in mixed acid, removed from the acid, whizzed in a centrifuge to remove as much acid as possible, washed in water until no acid reaction remains and finally boiled in several changes of water.

Impurities: Sulfuric esters.

Grades: Technical.

Containers: Wooden boxes.

Uses: As explosive for torpedoes (moist, compressed); production of collodion, celluloid, smokeless powder (either alone or admixed with nitroglycerol, picrates, etc.).

Fire hazard: Dangerous.

Railroad shipping regulations: Cannot be shipped by express.

Nitrochlorobenzene* (a) Ortho-; (b) Para-, $\text{NO}_2\text{C}_6\text{H}_4\text{NH}_2$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By nitration, yielding a mixture of the ortho- and para-nitrochlorobenzenes.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Nitrochlorobenzol. See Nitrochlorobenzene.

Nitrochloroform. See Nitrotrichloromethane.

Nitrodracrylic Acid. See Acid nitrobenzoic, Para-.

Nitrogen* N_2 .

Color and properties: Colorless, odorless, tasteless gas constituting about four-fifths of the air; colorless liquid.

Constants: Specific gravity (gas) 0.96737; (liquid) 0.804; (solid) 1.0265; melting-point -210.5°C .; boiling-point -195.5°C .

Soluble in water; slightly soluble in alcohol.

Derivation: From liquid air by distilling off the oxygen.

Impurities: Argon and other "rare gases" of the air; oxygen.

Grades: Technical.

Containers: Steel cylinders.

Uses: Production of nitric acid, cyanamid, cyanides and nitrides of metals.

Fire hazard: None.

Railroad shipping regulations: Green label.

Nitrogen Monoxide. See Nitrous oxide.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Nicotinic Acid. See Acid nicotinic.

Nigella Sativa (Nutmeg flower; Small fennel flower; Black cumin; Black caraway).

Derivation: Seed of *Nigella sativa*.

Habitat: Germany and Mediterranean region.

Grades: Technical.

Containers: Bags.

Uses: Medicine; veterinary medicine: snuff.

Fire hazard: None.

Railroad shipping regulations: None.

Nigrite. A variety of asphalt mined at Soldier Summit, Utah, of unknown composition.

Nigrosine.* A class of blue or black dye-stuffs, some soluble in water, some in alcohol and some in oil, used in manufacture of ink and shoe-polish and in dyeing leather, wood, textiles, etc.

Niobium. See Columbium

Niter. See Potassium nitrate.

Niter Cake. See Sodium bisulfate.

Niter, Chili. See Sodium nitrate.

Niter, Cubic. See Sodium nitrate

Niton. See Radium emanation.

Nitramidine. A nitrocellulose or pyroxyline made from paper or cardboard

Nitraniline* (a) Meta-; (b) Ortho-; (c) Para-; $\text{NO}_2\text{C}_6\text{H}_4\text{NH}_2$.

Color and properties: (a) Yellow needles. (b) Orange-red needles. (c) Yellow needles.

| | | | |
|------------------|---------|--------|-------|
| Constants: | (a) | (b) | (c) |
| Specific gravity | 1.308 | 1.443 | 1.417 |
| Melting point | 111.8°C | 68.4°C | 148°C |
| Boiling-point | 285°C | ... | .... |

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: From aniline by nitration after acetylation, with subsequent removal of the acetyl group by hydrolysis.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: (a) Color test for pine wood.

(b) Has no commercial uses at present. (c) Production of para-nitraniline red.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Nitratine. See Sodium nitrate.

Nitrating Acid. See Acid, Nitrating.

Nitre. See Potassium nitrate.

Nitre Cake. See Sodium bisulfate.

Nitre, Chili. See Sodium nitrate.

Nitre, Cubic. See Sodium nitrate.

Nitric Acid. See Acid nitric.

Nitric Acid, Fuming. See Acid nitric, Fuming

Nitroacetanilide, Para.*

$\text{NO}_2\text{C}_6\text{H}_4\text{NHCOCH}_3$.

Color and properties: White crystals.

Constants: Melting-point 207°C.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By acetylating aniline, then nitrating.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Manufacture of para-nitraniline.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Nitroaniline. See Nitraniline.

Fire hazard: None.

Railroad shipping regulations: None.

Nitronaphthalene, Alpha.* $C_{10}H_7NO_2$. Color and properties: Yellow crystals. Constants: Specific gravity 1.331; melting-point $61^\circ C$; boiling-point $304^\circ C$. Soluble in alcohol and ether; insoluble in water.

Derivation: By the action of a mixture of nitric and sulfuric acids on finely ground naphthalene.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Dyestuffs; naphthylamine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Nitronaphthalenesulfonic Acid. See Acid nitronaphthalenesulfonic.

Nitrophenol* $NO_2.C_6H_4OH$. (a) Ortho-; (b) Meta-; (c) Para-.

Color and properties: (a) Light yellow crystals. (b) Yellow crystals. (c) Colorless or yellowish crystals.

| Constants: | (a) | (b) | (c) |
|------------------|-----------------|----------------|-----------------|
| Specific gravity | 1.657 | 1.485 | 1.479 |
| Melting-point | $44-27^\circ C$ | $95-3^\circ C$ | $113-8^\circ C$ |
| Boiling-point | $214^\circ C$ | $194^\circ C$ | .... |

Soluble in alcohol and ether; slightly soluble in water.

Derivation: (a) and (c) From phenol and dilute nitric acid, and separation by steam distillation, ortho-nitrophenol being volatile and para-nitrophenol not. (b) Meta-nitroaniline dissolved in dilute sulfuric acid is diazotized. The diazo solution is decomposed by boiling with dilute sulfuric acid, cooled, extracted with ether and the latter evaporated. (c) By diazotization of sulfanilic acid, after which the diazo compound is treated with warm dilute nitric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: (b) Manufacturing the rhodamine dyestuffs. (c) Production of phenacetin, phenolphthalein, etc.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Nitrosalicylic Acid, Meta- See Acid nitrosalicylic, Meta-.

Nitrosodimethylaniline, Para.*

$NO.C_6H_4N(CH_3)_2$.

Color and properties: Green leaflets.

Constants: Melting-point $87.8^\circ C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: By action of nitrous acid on dimethylaniline.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Production of methylene blue.

Fire hazard: None.

Railroad shipping regulations: None.

Nitrosonaphthol* $NO.C_{10}H_6.OH$.

(a) Alpha-nitroso-alpha-naphthol.

(b) Beta-nitroso-alpha-naphthol.

(c) Alpha-nitroso-beta-naphthol.

Color and properties: Yellow needles.

Constants: Melting-point (a) $152^\circ C$;

(b) Decomposes at $194^\circ C$; (c) $106^\circ C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By the action of nitrous acid on beta-naphthol. (b) From beta-naphthol by reacting with sodium nitrite and zinc chloride.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Nitrotoluene* $NO_2.C_6H_4.CH_3$ (Mononitrotoluene, Nitrotoluol, Methylnitrobenzene).

Color and properties:

(a) Meta-: Yellow crystals.

(b) Ortho-alpha: Yellow liquid.

(c) Ortho-beta: Yellow crystals.

(d) Para-: Yellow crystals.

| Constants: | (a) | (b) | (c) | (d) |
|-------------------|-------------------|-----------------|-----------------|-----------------|
| Specific gravity: | 1.1570 | 1.1650 | 1.1650 | 1.1856 |
| Melting-point: | $16^\circ C$ | $-9.55^\circ C$ | $-3.85^\circ C$ | $51.4^\circ C$ |
| Boiling-point: | $230-231^\circ C$ | $222.3^\circ C$ | .... | $237.7^\circ C$ |

Soluble in alcohol, ether and benzol; insoluble in water.

Derivation: (a) From meta-nitro-paratoluidine. Can be nitrated further to dinitrotoluol, only with greater difficulty, while ortho- and para- compounds are easily converted. (b), (c) and (d) From toluol by nitration and separation by fractional distillation.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: (a) and (c) No important use.

(b) and (d) For production of toluidine, tolidine, fuchsine and various synthetic dyestuffs.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Nitrotoluol. See Nitrotoluene.

Nitrotrichloromethane* (Nitrochloroform; Chloropicrin) CCl_3NO_2 . A military poison gas used in the late war.

Nitrous Ether* (Ethyl nitrite)

$\text{C}_2\text{H}_5\text{NO}_2$.

Color and properties: Yellowish, highly aromatic, ethereal, inflammable, exceedingly volatile liquid.

Constants: Specific gravity 0.900; boiling-point 16.4°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By the action of ethyl alcohol on nitrous oxide gas. (b) By treating alcohol with alkali nitrites and sulfuric acid.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Organic preparations; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Nitrous Oxide* (Laughing gas) N_2O .

Color and properties: Colorless, sweet-tasting gas, condensable into a colorless liquid which solidifies when allowed to evaporate.

Constants: Specific gravity: Gas 0.937; Liquid, 1.530. Melting-point: Liquid, -102°C . Boiling-point: Liquid, -89.8°C .

Soluble in alcohol and concentrated sulfuric acid; slightly soluble in water.

Derivation: By heating a mixture of sodium nitrate and ammonium sulfate to 230°C . and collecting the gas over mercury or hot water.

Grades: Pure.

Containers: Steel cylinders.

Uses: Anesthetic in dentistry and surgery, either pure or mixed with oxygen.

Fire hazard: None.

Railroad shipping regulations: Green label.

Nitroxylene* (Mononitroxylene; Nitroxylol; Dimethylnitrobenzene) (a) Nitro-ortho-xylene; (b) Nitro-meta-xylene; (c) Nitro-para-xylene

$\text{C}_6\text{H}_5(\text{CH}_3)_2\text{NO}_2$.

Color and properties: (a) Pale yellow, crystalline needles; (b) Yellow liquid becoming red-brown on exposure; (c) Pale yellow liquid becoming red-brown on exposure.

Constants:

| | (a) | (b) | (c) |
|------------------|---------------------|---------------------|---------------------|
| Specific gravity | 1.130 | 1.135 | 1.132 |
| Melting-point | 20°C | 2°C | Liquid |
| Boiling-point | 258°C | 246°C | 240°C |

Soluble in alcohol and ether; insoluble in water.

Derivation: By nitrating xylol, resulting in a mixture of the three nitroxylenes, consisting largely of the nitro-meta-xylene (1:3:4).

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Nitroxylol. See Nitroxylene.

Nivenite. A Texas variety of uraninite.

Noah's Ark. See Cypridium.

Noble Laurel. See Laurus.

Noble Liverwort. See Liverwort.

Norit. A vegetable char used for the decolorization of sugar.

Normal Heptane. See Heptane.

Normal Hexane. See Hexane.

Novaculite. An exceedingly fine-grained quartzose rock, used as an abrasive. Occurs in Arkansas, Georgia, Massachusetts, North Carolina, Oklahoma and Tennessee.

Nuces Nucistæ. See *Myristica*.

"Nulomoline." A proprietary glycerine substitute.

Nutgall. See Galls.

Nutgall, Chinese. Properties and uses similar to that of galls.

Nutmeg. See *Myristica*.

Nutmeg Flowers. See *Nigella sativa*.

Nutmeg Oil. See page 506.

Nux Moschata. See *Myristica*.

Nux Vomica (Quaker buttons; Bachelor's buttons; Poison nut; Dog button; Vomit nut).

Derivation: Dried ripe seed of *Strychnos nux vomica*.

Habitat: Southern Asia and northern Australia.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine; production of strychnine and brucine.

Fire hazard: None.

Railroad shipping regulations: None.

O

Oak Bark.*

Derivation: From *Quercus robur* (embracing *Q. pedunculata* and *Q. sessiliflora* as sub species).

Habitat: United States; Great Britain and Europe.

Grades: 25 per cent tannin.

Containers: Extract: Wooden barrels.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Oakum. Hemp fiber produced by untwisting rope, used for calking in ship and boat-building. Usually impregnated with tar or pitch.

Obsidianite (Volcanic glass). Extrusive igneous rock which has been fused and cooled in an amorphous or nearly entirely amorphous condition, usually dark in color and having a vitreous appearance and fracture. Used in acid concentrating plants on account of its acid-resisting properties.

Ocher.* A metallic oxide occurring in nature in an earthy or pulverulent form. Commercially, ocher refers to the earthy iron oxides (yellow, red and brown).

Grades: Based on tinctorial value and iron oxide content.

Containers: Wood barrels.

Uses: Paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Ocher, Antimony. See *Stibiconite*.

Ochre. See *Ocher*.

Octahedrite. A natural, crystallized titanium oxide. See also *Brookite* and *Rutile*.

Octoic Acid. See *Acid caprylic*.

Octylic Acid. See *Acid caprylic*.

Oenanthal. See *Oenanthal*.

Oenanthic Acid. See *Acid oenanthic*.

Oenanthic Ether* (Cognac oil; Oenanthylic ether) $\text{C}_{11}\text{H}_{23}(\text{CH}_2)_5\text{CO}_2\text{C}_2\text{H}_5$. Color and properties: Clear, colorless oil.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating oenanthic acid and ethyl alcohol in presence of sulfuric acid, and subsequent recovery by distillation.

Grades: Technical.

Containers: Iron drums; glass bottles.

- Uses:** Organic synthesis; manufacturing artificial cognac.
Fire hazard: None.
Railroad shipping regulations: None.
- Oenanthol*** (Oenanthic aldehyde; Heptanal; Heptoic aldehyde; Oenanthal) $C_6H_{12}O$.
Color and properties: Highly refracting, volatile, colorless liquid; penetrating, aromatic odor. Keep well stoppered.
Constants: Specific gravity 0.850; boiling-point 153° - $155^{\circ}C$.
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the distillation of castor oil in vacuo, followed by fractional distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Tins; glass bottles.
Uses: Heptylic alcohol; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.
- Oenanthylic Acid.** See Acid oenanthic.
- Oil, Absinthe.** See Wormwood oil.
- Oil, Acetone.** See Acetone oil.
- Oil, Ajava.** See Ajowan oil.
- Oil, Ajowan.** See Ajowan oil.
- Oil, Albahaca.** See Tolu oil.
- Oil, Alizarin.** See Alizarin.
- Oil, Allspice.** See Allspice oil.
- Oil, Almond.** See Almond oil.
- Oil, Almond, Bitter.** See Almond oil, Bitter.
- Oil, Amber.** See Amber oil.
- Oil, Ammoniac.** See Ammoniac oil.
- Oil, Angelica.** See Angelica oil.
- Oil, Angostura.** See Angostura oil.
- Oil, Aniline.** See Aniline.
- Oil, Animal.** See Bone oil.
- Oil, Anise.** See Anise oil.
- Oil, Aniseed.** See Anise oil.
- Oil, Anise-seed.** See Anise oil.
- Oil, Anise, Star.** See Star anise oil.
- Oil, Anthracene.** See Anthracene.
- Oil, Arachis.** See Peanut oil.
- Oil, Arnica.** See Arnica oil.
- Oil, Asafoetida.** See Asafoetida oil.
- Oil, Asarum Canadense.** See Asarum canadense oil.
- Oil, Asarum Europaeum.** See Asarum europaeum oil.
- Oil, Astral.** See Kerosene.
- Oil, Balm.** See Balm oil.
- Oil, Banana.** See Amyl acetate.
- Oil, Banks.** See Cod-liver oil.
- Oil, Basil.** See Basil oil.
- Oil, Bay.** See Laurel oil, Volatile.
- Oil, Bay-berry.** See Myrcia oil.
- Oil, Bay, Sweet.** See Laurel oil, Volatile.
- Oil, Bean.** See Soya-bean oil.
- Oil, Bean, Chinese.** See Soya-bean oil.
- Oil, Benne.** See Sesame oil.
- Oil, Bergamot.** See Bergamot oil.
- Oil, Betula.** See Betula oil.
- Oil, Birch.** See Birch oil.
- Oil, Birch, Sweet.** See Ravison oil.
- Oil, Bitter Almond.** See Almond oil, Bitter.
- Oil, Bitter Almond, Artificial.** See Nitrobenzene.
- Oil, Black-fish.** See Black-fish oil.
- Oil, Black Mustard.** See Mustard oil, Volatile.
- Oil, Black Pepper.** See Pepper oil.

- Oil, Black Sea Rape. See Ravison oil.
Oil, Blasting. See Nitroglycerin.
Oil, Blown. See Blown oil.
Oil, Blubber. See Whale oil.
Oil, Body. See Whale oil.
Oil, Boiled. See Linseed oil.
Oil, Bone. See Bone oil.
Oil, Bottle-nose. See Bottle-nose oil.
Oil, Brazil-nut. See Castanha oil.
Oil, Butter. See Butter oil.
Oil, Cabbage-seed. See Cabbage-seed oil.
Oil, Cade. See Cade oil.
Oil, Cahoun. See Cohune oil.
Oil, Cahune. See Cohune oil.
Oil, Cajuput. See Cajuput oil.
Oil, Calamus. See Calamus oil.
Oil, Camomile. See Chamomile oil.
Oil, Camphor. See Camphor oil.
Oil, Camphorated. See Camphor oil.
Oil, Camphor-wood. See Camphor-wood oil.
Oil, Cananga. See Cananga oil.
Oil, Candle-nut. See Lumbang oil.
Oil, Canella. See Canella oil.
Oil, Caraway. See Caraway oil.
Oil, Cardamom. See Cardamom oil.
Oil, Carron. See Carron oil.
Oil, Cassia. See Cassia oil.
Oil, Cashew. See Cashew oil.
Oil, Cashew-nut. See Cashew oil.
Oil, Castanha. See Castanha oil.
Oil, Castor. See Castor oil.
Oil, Cedar. See Cedar-leaf oil.
Oil, Celery-seed. See Celery-seed oil.
Oil, Chabert. See Chabert oil.
Oil, Chamomile. See Chamomile oil.
Oil, Chaulmoogra. See Chaulmoogra oil.
Oil, Checkerberry. See Gaultheria oil.
Oil, Chenopodium, American. See Chenopodium oil.
Oil, Chenopodium, Levant. See Worm-seed oil.
Oil, Cherry Laurel. See Cherry laurel oil.
Oil, China-wood. See Tung oil.
Oil, Chinese Bean. See Soya-bean oil.
Oil, Chinese Cinnamon. See Cassia oil.
Oil, Cinnamon. See Cinnamon oils.
Oil, Cinnamon, Ceylon. See Cinnamon oil, Ceylon.
Oil, Cinnamon, Chinese. See Cassia oil.
Oil, Cinnamon, Leaf. See Cinnamon-leaf oil.
Oil, Citronella. See Citronella oil.
Oil, Clove. See Clove oil.
Oil, Coal. See Coal oil, Kerosene and Petroleum.
Oil, Cocoa-nut. See Coco-nut oil.
Oil, Coco-nut. See Coco-nut oil.
Oil, Coco-nut Palm. See Coco-nut oil.
Oil, Cod-liver. See Cod-liver oil.
Oil, Cognac. See Oenanthic ether.
Oil, Cohune. See Cohune oil.
Oil, Colza. See Rape-seed oil.
Oil, Copaiba. See Copaiba oil.
Oil, Copperah. See Copra oil.
Oil, Copra. See Copra oil.

- Oil, Coriander. See Coriander oil.
Oil, Corn. See Corn oil.
Oil, Corozo-nut. See Cohune oil.
Oil, Cotton-seed. See Cotton-seed oil.
Oil, Creosote. See Cresote, Coal-tar.
Oil, Croton. See Croton oil.
Oil, Crude. See Petroleum.
Oil, Cubeb. See Cubeb oil.
Oil, Cucumber. See Cucumber oil.
Oil, Cumin. See Cumin oil.
Oil, Cuscus. See Vetiver oil.
Oil, Cypress. See Cypress oil.
Oil, Dead. See Dead oil.
Oil, Deodorized. See Deodorized oils.
Oil, Dill. See Dill oil.
Oil, Dip. See Dip oil.
Oil, Dippel's. See Bone oil.
Oil, Dog-fish. See Shark oil.
Oil, Dolphin. See Porpoise oil.
Oil Driers. See Driers
Oil, Dutch. See Haarlem oil.
Oil, Earth-nut. See Peanut oil.
Oil, Edible. See Edible oils.
Oil, Egg. See Egg yolk.
Oil, Elemi. See Elemi oil.
Oil, Ergot. See Ergot oil.
Oil, Erigeron. See Erigeron oil.
Oil, Ethylmustard. See Ethyl thiocarbimide.
Oil, Eucalyptus. See Eucalyptus oil.
Oil, Eugenol. See Eugenol.
Oil, Fennel. See Fennel oil.
Oil, Fennel-seed. See Fennel oil.
Oil, Fir-wood. See Pine oil.
Oil, Fish. See Black-fish, cod-liver, halibut, herring, menhaden, porpoise, salmon, sardine, shark and tuna oils.
Oil, Flax-seed. See Linseed oil.
Oil, Florence. See Olive oil.
Oil, Fusel. See Amyl alcoholic, Fermentation.
Oil, Gabian. See Gabian oil.
Oil, Galangal. See Galangal oil.
Oil, Garlic. See Garlic oil.
Oil, Gaultheria. See Gaultheria oil.
Oil, Gaultheria, Artificial. See Methyl salicylate.
Oil, Geranium. See Geranium oils.
Oil, Gingelly. See Sesame oil.
Oil, Ginger. See Ginger oil.
Oil, Ginger-grass. See Ginger-grass oil.
Oil, Gingily. See Sesame oil.
Oil, Glonoin. See Nitroglycerin.
Oil, Goose-foot. See Chenopodium oil.
Oil, Gourd. See Cucumber oil.
Oil, Grain. See Amyl alcohol.
Oil, Grape-seed. See Grape-seed oil.
Oil, Grape-stone. See Grape-seed oil.
Oil, Green. See Anthracene.
Oil, Ground-nut. See Peanut oil.
Oil, Guaiac Wood. See Guaiac wood oil.
Oil, Gynocardia. See Chaulmoogra oil.
Oil, Haarlem. See Haarlem oil.
Oil, Halibut. See Halibut oil.
Oil, "Hardened." See Hydrogenated oils.

- Oil, Hedeoma. See Hedeoma oil.
Oil, Hemlock. See Hemlock oil.
Oil, Hemp. See Hemp-seed oil.
Oil, Hemp-seed. See Hemp-seed oil.
Oil, Herring. See Herring oil.
Oil, Hoof. See Neats-foot oil.
Oil, Hop. See Hop oil.
Oil, Horse. See Horse oil.
Oil, Horsemint. See Horsemint oil.
Oil, Hydrogenated. See Hydrogenated oils.
Oil, Hyssop. See Hyssop oil.
Oil, Ilang-ilang. See Cananga oil.
Oil, Illicium. See Anise oil.
Oil, Iodized. See Iodized oil.
Oil, Iva. See Iva oil.
Oil, Jaborandi. See Jaborandi oil.
Oil, Jasmine. See Jasmine oil.
Oil, Jaw. See Black-fish oil.
Oil, Jeppel's. See Bone oil.
Oil, Juniper. See Juniper-berry oil.
Oil, Kapoc. See Kapok oil.
Oil, Kapok. See Kapok oil.
Oil, Katchung. See Peanut oil.
Oil, Kesso. See Valerian oil, Japanese.
Oil, Ladanum. See Ladanum oil.
Oil, Lard. See Lard oil.
Oil, Laurel, Volatile. See Laurel oil, Volatile.
Oil, Lavender Flower. See Lavender flower oil.
Oil, Lavender Spike. See Lavender spike oil.
Oil, Lemon. See Lemon oil.
Oil, Lemon-grass. See Lemon-grass oil.
Oil, Levisticum. See Lovage oil.
Oil, Light. See Light oils.
Oil, Lime. See Lime oil.
Oil, Linaloe. See Linaloe oil.
Oil, Linseed. See Linseed oil.
Oil, Linseed, Sulfurated and terebinthinated. See Haarlem oil.
Oil, Lovage. See Lovage oil.
Oil, Lubricating. See Lubricating oils.
Oil, Lumbang. See Lumbang oil.
Oil, Mace. See Mace oil.
Oil, Maize. See Corn oil.
Oil, Male Fern. See Male fern oil.
Oil, Malon. See Black-fish oil.
Oil, Mandarin. See Mandarin oil.
Oil, Margarine. See Margarine oils.
Oil, Marjoram. See Marjoram oil.
Oil, Mastic. See Mastic oil.
Oil, Matico. See Matico oil.
Oil, Melissa. See Lemon-grass oil.
Oil, Menhaden. See Menhaden oil.
Oil, Mignonette. See Reseda oil, page 508.
Oil, Mineral. See Petroleum.
Oil, Mirbane. See Nitrobenzene.
Oil, Monarda. See Horsemint oil.
Oil, Mosoi Flower. See Cananga oil.
Oil, Mossbunker. See Menhaden oil.
Oil, Mowra. See Mowra oil.
Oil, Mustard. See Mustard oil.
Oil, Myrbane. See Nitrobenzene.
Oil, Myrcia. See Myrcia oil.
Oil, Myristica. See Nutmeg oil, page 506.
Oil, Myrrh. See Myrrh oil.
Oil, Myrtle. See Myrtle oil.
Oil, Neats-foot. See Neats-foot oil.
Oil, Neroli. See Neroli oil.
Oil, Neutral. See Neutral oils.
Oil, Nutmeg. See Nutmeg oil, page 506.
Oil, Oleo. See Oleo oil.

Oil, Olibanum. See Olibanum oil.
Oil, Olive. See Olive oil.
Oil, Olive-kernel. See Olive-kernel oil.
Oil, Onion. See Onion oil.
Oil, Orange. See Orange-peel oil.
Oil, Orange-flower. See Neroli oil.
Oil, Orris. See Orris oil.
Oil, Origanum. See Thyme oil.
Oil, Oxidized. See Blown oil.
Oil, Palm. See Palm butter and Palm-nut oil.
Oil, Palm-kernel. See Palm-nut oil.
Oil, Palm-nut. See Palm-nut oil.
Oil, Palmarosa. See Geranium oil, Turkish.
Oil, Paraffin. See Paraffin oil.
Oil, Parsley. See Parsley oil.
Oil, Patchouli. See Patchouli oil.
Oil, Peach-kernel. See Peach-kernel oil.
Oil, Peanut. See Peanut oil.
Oil, Pennalene White. See Pennalene white oil.
Oil, Pennyroyal. See Hedeoma oil.
Oil, Pepper. See Pepper oil.
Oil, Peppermint. See Peppermint oil.
Oil, Perilla. See Perilla oil.
Oil, Pescola. See Pescola oil.
Oil, Petit-grain. See Petit-grain oil.
Oil, Petit-grain Citronier. See Petit-grain oil.
Oil, Phenylmustard. See Phenylmustard oil.
Oil, Phosphorated. See Phosphorated oil.

Oil, Phosphorized. See Phosphorated oil.
Oil, Pimenta. See Pimenta oil.
Oil, Pine. See Pine oil.
Oil, Pine-needle. See Pine oil.
Oil, Pine-tar. See Pine-tar oil.
Oil, Pogy. See Menhaden oil.
Oil, Polymerized. See Blown oil.
Oil, Poppy. See Poppy oil.
Oil, Poppy-seed. See Poppy oil.
Oil, Porpoise. See Porpoise oil.
Oil, Rape. See Rape-seed oil.
Oil, Rape, Black Sea. See Ravison oil.
Oil, Rape-seed. See Rape-seed oil.
Oil, Rasin-seed. See Grape-seed oil.
Oil, Ravison. See Ravison oil.
Oil, Red. See Acid oleic.
Oil, Reseda. See Reseda oil, page 508.
Oil, Ricinola. See Castor oil.
Oil, Ricinus. See Castor oil.
Oil, Rock. See Petroleum.
Oil, Rose. See Rose oil.
Oil, Rose Geranium. See Geranium oil, Rose.
Oil, Rosemary. See Rosemary oil, page 508.
Oil, Rosin. See Rosin oil.
Oil, Sage. See Sage oil, page 508.
Oil, Salad. See Salad oil.
Oil, Salmon. See Salmon oil.
Oil, Salvia. See Sage oil, page 508.
Oil, Sandalwood. See Santalwood oil.
Oil, Santal. See Santalwood oil.

- Oil, Sardine. See Sardine oil.
- Oil, Sassafras. See Sassafras oil.
- Oil, Savin. See Savin oil.
- Oil, Seal. See Seal oil.
- Oil, Seed. See Cotton-seed oil.
- Oil, Sesame. See Sesame oil.
- Oil Shale. See Shale.
- Oil, Shark. See Shark oil.
- Oil, Shark-liver. See Shark-liver oil.
- Oil, Snake-root. See Asarum oils.
- Oil, Sod. See Degras.
- Oil, Soja-bean. See Soya-bean oil.
- Oil, Solar. See Kerosene.
- Oil, Soy. See Soya-bean oil.
- Oil, Soya-bean. See Soya-bean oil.
- Oil, Spearmint. See Spearmint oil.
- Oil, Sperm. See Whale oil.
- Oil, Spruce. See Spruce oil.
- Oil, Star Anise. See Star Anise Oil.
- Oil, Stillingia. See Stillingia oil.
- Oilstone. A fine-grained whetstone on which oil is used. Arkansas, Georgia, Indiana, Ohio.
- Oil, Storax. See Styrax oil, page 509.
- Oil, Styrax. See Styrax oil, page 509.
- Oil, Sulfur Olive. Olive oil (foots).
- Oil, Sunflower. See Sunflower oil.
- Oil, Sweet. See Olive oil.
- Oil, Tallow-seed. See Stillingia oil.
- Oil, Tansy. See Tansy Oil.
- Oil, Tar, Wood. See Tar oil, Wood.
- Oil, Tarragon. See Tarragon oil.
- Oil, Tea. See Tea oil.
- Oil, Tea-seed. See Tea oil.
- Oil, Teel. See Sesame oil.
- Oil, Theobroma. See Cacao butter.
- Oil, Thuja. See Thuja oil.
- Oil, Thyme. See Thyme oil.
- Oil, Til. See Sesame oil.
- Oil, Tolu. See Tolu oil.
- Oil, Tolu Balsam. See Tolu oil.
- Oil, Tomato-seed. See Tomato-seed oil.
- Oil, Train. See Whale oil.
- Oil, Tuna. See Tuna oil.
- Oil, Tung. See Tung oil.
- Oil, Tunny-fish. See Tuna oil.
- Oil, Turkey-red. See Turkey-red oil.
- Oil, Turpentine. See Turpentine oil.
- Oil, Valerian. See Valerian oils.
- Oil, Valeriana Celtica. See Valeriana celtica oil.
- Oil, Varnish. See Varnish oil.
- Oil, Verbena, East Indian. See Lemon-grass oil.
- Oil, Verbena, Singapore. See Citronella oil, Singapore.
- Oil, Verti-vert. See Verti-vert oil.
- Oil, Vetiver. See Vetiver oil.
- Oil, Vitriol. See Acid sulfuric.
- Oil, Walnut. See Walnut oil.
- Oil, Whale. See Whale oil.
- Oil, Wine-stones. See Grape-seed oil.
- Oil, Wintergreen. See Gaultheria oil.
- Oil, Wintergreen, Artificial. See Methyl salicylate.
- Oil, Wood-tar. See Tar oil, Wood.
- Oil, Wormseed. See Wormseed oil.

Oil, Wormwood. See Wormwood oil.

Oil, Ylang-ylang. See Ylang-ylang oil.

Oil, Zedoary. See Zedoary oil.

Old Fustic. See *Morus tinctoria*.

Oleic Acid. See Acid oleic.

Olein. The glyceride of oleic acid occurring in fats.

Oleic Acid. See Acid oleic.

Oleomargarine.*

Derivation: Made from a mixture of natural or hydrogenated animal and vegetable fats colored with annatto or aniline dyes and sometimes flavored with butter.

Grades: Technical.

Containers: Boxes; tubs.

Uses: Butter substitute.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Oleo Oil.*

Color and properties: Yellow liquid fat.

Derivation: Liquid olein and some palmitin obtained by cold-pressing tallow.

Grades: Technical.

Containers: Wooden barrels.

Uses: Making oleomargarine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Oleoresin.

Derivation: Mixtures of the resin and the essential oil of the plant from which they exude. They have a pungent taste and a peculiar odor and are generally referred to as balsams. See Benzoin, Peru, Tolu and Storax balsams.

Oleoresin Capsicum.*

Derivation: From the fruit of *Capsicum fastigiatum* (Cayenne or African pepper) by acetone extraction.

Soluble in alcohol and ether.

Grades: Technical; U. S. P.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Oleoresin Cubeb.*

Derivation: From the fruit of *Piper cubeba* by alcohol extraction.

Soluble in alcohol and ether.

Grades: Technical; U. S. P.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Oleoresin Ginger.*

Derivation: From rhizome *Zingiber officinale* by acetone extraction.

Soluble in alcohol and ether.

Grades: Technical; U. S. P.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Oleoresin Pepper.*

Derivation: By acetone extraction of the fruit of *Piper nigrum*.

Soluble in alcohol and ether.

Grades: Technical; U. S. P.

Containers: Glass bottles; boxes

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Oleoresina Aspidii, U. S. P. Oleoresin aspidium.

Oleoresina Capsici, U. S. P. See Oleoresin capsicum.

Oleoresina Cubebæ, U. S. P. See Oleoresin cubeb.

Oleoresina Petroselinæ, U. S. P. Oleoresin parsley fruit.

Oleoresina Piperis, U. S. P. See Oleoresin pepper.

Oleoresina Zingiberis, U. S. P. See Oleoresin ginger.

Oleo-Stearin. See Stearin.

Oleum. The Latin name for oil, also applied to fuming sulfuric acid (See Acid sulfuric.)

- Oleum Abietis**, B. P. See Pine oil.
- Oleum Ajowan**, B. P. See Ajowan oil.
- Oleum Amygdalæ Amaræ**, U. S. P., B. P. See Almond oil, Bitter.
- Oleum Amygdalæ Expressum**, U. S. P. See Almond oil, Sweet.
- Oleum Anethi**, B. P. See Dill oil.
- Oleum Anisi**, U. S. P., B. P. See Anise oil.
- Oleum Anthemidis**, B. P. See Chamomile oil.
- Oleum Arachis**, B. P. See Peanut oil.
- Oleum Aurantii**, U. S. P. See Orange-peel oil.
- Oleum Bubulum**. See Neats-foot oil.
- Oleum Cadinum**, U. S. P., B. P. See Cade oil.
- Oleum Cajuputi**, U. S. P., B. P. See Cajuput oil.
- Oleum Carui**, U. S. P., B. P. See Caraway oil.
- Oleum Caryophylli**, U. S. P., B. P. See Clove oil.
- Oleum Cassiæ**, U. S. P., B. P. See Cassia oil.
- Oleum Chaulmoogræ**, B. P. See Chaulmoogra oil.
- Oleum Chenopodii**, U. S. P. See Chenopodium oil.
- Oleum Cinnamoni**, B. P. See Cinnamon oils.
- Oleum Copaibæ**, B. P. See Copaiba oil.
- Oleum Coriandri**, U. S. P., B. P. See Coriander oil.
- Oleum Crotonis**, B. P. See Croton oil.
- Oleum Cubebæ**, U. S. P., B. P. See Cubeb oil.
- Oleum Eucalypti**, U. S. P., B. P. See Eucalyptus oil.
- Oleum Foeniculi**, U. S. P. See Fennel oil.
- Oleum Gaultheriæ**, B. P. See Gaultheria oil.
- Oleum Gossypii Seminis**, U. S. P. See Cotton-seed oil.
- Oleum Graminis Citrati**, B. P. See Lemon-grass oil.
- Oleum Juniperi**, U. S. P., B. P. See Juniper oil.
- Oleum Lavandulæ**, U. S. P., B. P. See Lavender oil.
- Oleum Limonis**, U. S. P., B. P. See Lemon oil.
- Oleum Lini**, U. S. P., B. P. See Linseed oil.
- Oleum Menthæ Piperitæ**, U. S. P., B. P. See Peppermint oil.
- Oleum Menthæ Viridis**, U. S. P., B. P. See Spearmint oil.
- Oleum Morrhuæ**, U. S. P., B. P. See Cod-liver oil.
- Oleum Myristicæ**, U. S. P., B. P. See Nutmeg oil, page 506.
- Oleum Olivæ**, U. S. P., B. P. See Olive oil.
- Oleum Phosphoratum**, B. P. See Phosphorated oil.
- Oleum Picis Liquidæ Rectificatum**, U. S. P. Oil of tar, Rectified.
- Oleum Pimentæ**, U. S. P. See Pimento oil.

Oleum Pini Pumilionis, U. S. P. See Pine oil.

Oleum Ricini, U. S. P., B. P. See Castor oil.

Oleum Rosæ, B. P. See Rose oil.

Oleum Rosmarini, U. S. P., B. P. See Rosemary oil.

Oleum Santali, U. S. P., B. P. See Santalwood oil.

Oleum Sassafras, U. S. P. See Sassafras oil.

Oleum Sesami, U. S. P., B. P. See Sesame oil.

Oleum Sinapis Volatile, U. S. P., B. P. See Mustard oil.

Oleum Terebinthinæ, U. S. P. See Turpentine oil.

Oleum Terebinthinæ Rectificatum, U. S. P., B. P. See Turpentine oil, Rectified.

Oleum Theobromatis, U. S. P.; B. P. See Cacao butter.

Oleum Thymi, U. S. P. See Thyme oil.

Oleum Tigllii, U. S. P., B. P. See Croton oil.

Olibanum. See Gum thus.

Olibanum Oil.

Color and properties: Yellow liquid. Chief known constituents: Pinene; phellandrene; dipentene.

Constants: Specific gravity 0.875-0.885; optical rotation -11° to -17° . Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: By extraction from gum thus.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Olive Oil* (Sweet oil, Florence oil, *Oleum olivæ*).

Color and properties: Pale yellow or greenish-yellow, fixed, liquid oil.

Chief known constituents: Olein; palmitin.

Constants: Specific gravity 0.910-0.918; saponification value 185-196; iodine value 77-88.

Soluble in ether, chloroform and carbon bisulfide; sparingly soluble in alcohol.

Derivation: By expressing the pulp of the fruit of the olive tree, *Olea europæa*. The best oil comes from fruit not quite ripe. The crude oil is washed and filtered. The cake is subjected to further pressings, and finally solvent extraction, a lower grade of oil being produced each time.

Impurities: Free fatty acids, sediment, water and adulterants.

Adulterants: Cotton-seed, peanut, sesame and poppy oils.

Grades: Gallipoli; Green foots; Olive foots; U. S. P.; B. P. According to the chemists of the New York Produce Exchange, commercial olive oil should not contain over 2 per cent moisture or sediment, and not over 7 per cent free fatty acids. Oil sold as yellow must be strictly yellow, and not reddish in color. Oil sold as green must be a true green in color and must not turn brown when treated with a 20° Be. solution of sodium hydroxide, 8 c.c. of the solution being added to 10 grams of oil.

Containers: Wooden barrels; tins; glass bottles.

Uses: As food (substitute for butter in Italy and other countries); in ointments, liniments, etc.; for manufacture of "Castile" soap; special textile soaps; lubricant; wool oil; tanning.

Fire hazard: None.

Railroad shipping regulations: None.

Olive-kernel Oil*

Color and properties: Golden-yellow, non-drying liquid, with a greenish cast if pressed hot. When obtained by extraction the oil is dark green.

Constants: Specific gravity 0.9184-0.9193; iodine number 87; saponification value 182.3-183.8.

Soluble in ether, chloroform and carbon bisulfide; sparingly soluble in alcohol; insoluble in water.

Derivation: From the kernels of the olive, *Olea europaea*, by pressing or extracting.

Grades: Technical.

Containers: Iron drums; tins.

Uses: Fuel; lubricant; soap; cooking; food.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Olive Spurge. See Mezereum.

Omal. Trichlorophenol.

Omega-chlorotoluene. See Benzyl chloride.

Omega-chlorotoluol. See Benzyl chloride.

Onion Oil.

Color and properties: Yellowish liquid; penetrating odor.

Chief known constituent: Allylpropyl disulfide.

Constants: Specific gravity 1.035-1.045; optical rotation -5.

Soluble in ether, chloroform and carbon bisulfide.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Opii Pulvis, U. S. P. Powdered opium.

Opium Deodoratum, U. S. P. Deodorized opium.

Opium Granulatum, U. S. P. Granulated opium.

Opium, Tincture of. See Laudanum.

Orange Flower Oil. See Neroli oil.

Orange Oil. See Orange-peel oil.

Orange Peel, Bitter (Curacao orange; Seville orange).

Derivation: Dried rind of the fruit of *Citrus vulgaris*.

Habitat: Northern India, Spain and West Indies; cultivated near the Mediterranean, Florida, California, etc.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Flavoring; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Orange-peel Oil* (Orange oil).

Color and properties: Pale yellow, liquid, essential oil, dextrorotatory.

Chief known constituent: Limonene.

Constants:

| | (a) Sweet | (b) Bitter |
|------------------|----------------|----------------|
| Specific gravity | 0.848 to 0.857 | 0.842 to 0.846 |
| Optical rotation | + 95 to + 99 | + 90 to + 93 |
| Refractive index | 1.473-1.4740 | .... |

Soluble in ether, alcohol and chloroform.

Derivation: Expressed from the peel of the fruit of *Citrus vulgaris*, *C. bigaradia*, etc.

Grades: (a) Sweet, from *Citrus aurantium*, etc.; U. S. P. (b) Bitter, from *Citrus bigaradia*, etc.

Containers: Copper flasks; glass bottles.

Uses: Flavoring; perfumes; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Orange Peel, Sweet (Sweet orange; Portugal orange; China orange).

Derivation: Rind of the fresh fruit of *Citrus aurantium*.

Habitat: Northern India, Spain and West Indies; cultivated near the Mediterranean, Florida, California, etc.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Flavoring; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Orange Root. See Hydrastis.

Orchil. See page 506.

Orcin. See page 507.

Oriental Cashew-nut. See *Semecarpus*.

Oriental Sweet Gum. See *Styrax*.

Origanum Oil. See *Thyme oil*.

Orphol. See *Bismuth beta-naphtholate*.

Orpiment. Arsenic trisulfide, As_2S_3 , found in Utah, containing 63 per cent of arsenic.

Orris Oil.

Color and properties: Semi-solid, yellowish, fatty, volatile oil; slightly dextrogyrate.

Chief known constituents: Myristic acid, oleic acid and their methyl esters.

Constants: Melting-point 44° - $50^{\circ}C$.; acid value 213-222.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the rhizome of *Iris florentina*.

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Perfumes; cosmetics.

Fire hazard: None.

Railroad shipping regulations: None.

Orr's White. See *Lithopone*.

Orseille. See *Orchil*, page 506.

Orthite. See *Allanite*.

Ortho-aminobenzoic Acid. See *Acid anthranilic*.

Ortho-aminobenzoylformic Acid. See *Isatin*.

Ortho-aminophenylglyoxalic Lactim. See *Isatin*.

Ortho-aminotoluene. See *Toluidine*, *Ortho-*.

Ortho-aminotoluol. See *Toluidine*, *Ortho-*.

Ortho-arsenic Acid. See *Acid ortho-arsenic*.

Ortho-boric Acid. See *Acid boric*.

Ortho-4-bromo-2-phenylacetone nitrile. See *Bromobenzyl cyanide*, *Ortho-*.

Ortho-bromobenzyl Cyanide. See *Bromobenzyl cyanide*, *Ortho-*.

Ortho-chloronitrobenzene. See *Chloronitrobenzene*, *Ortho-*.

Ortho-chloronitrobenzol. See *Chloronitrobenzene*, *Ortho-*.

Orthoclase. Potassium-aluminum silicate, occurring in nature and generally called *feldspar* or *potash feldspar*.

Ortho- compounds. Ortho- compounds are substitution products derived from benzol in which the substituting radicals or groups are (constitutionally) placed in certain definite positions in the benzene nucleus. See also: *Meta- compounds* and *Para- compounds*. The ortho- compounds will be found under the name of the compound, as: *Ortho-cresol*, see: *Cresol*, *Ortho-*; *Ortho-toluidine*, see: *Toluidine*, *Ortho-*, etc.

Ortho-dihydroxyanthraquinone. See *Alizarin*.

Ortho-dimethylbenzene. See *Xylol*, *Ortho-*.

Ortho-dimethylbenzol. See *Xylol*, *Ortho-*.

Ortho-dioxybenzene. See *Pyrocatechin*.

Ortho-dioxybenzol. See *Pyrocatechin*.

Ortho-hydrobenzoic Acid. See *Acid salicylic*.

Ortho-methylphenol. See *Cresol*, *Ortho-*.

Ortho-nitrophenol. See *Nitrophenol*.

Ortho-phthalimide. See *Phthalimide*, *Ortho-*.

Ortho-oxybenzaldehyde. See *Acid salicylic*.

Ortho-oxytoluene. See Cresol, Ortho-.

Ortho-oxytoluol. See Cresol, Ortho-.

Ortho-phosphoric Acid. See Acid phosphoric.

Ortho-phthalic Acid. See Acid phthalic.

Ortho-toluidine-meta-sulfonic Acid. See Acid toluidine-meta-sulfonic, Ortho-.

Ortho-vanadic Acid. See Acid vanadic.

Ortho-xylene. See Xylol, Ortho-.

Ortho-xylol. See Xylol, Ortho-.

Osage Orange.*

Derivation: Bark of the shrub, native of U. S.

Grades: 25 per cent Tannin

Containers: Wooden barrels.

Uses: Textile industry; leather industry.

Fire hazard: None.

Railroad shipping regulations: None.

Osmic Acid. See Acid osmic, Anhydride.

Osmium* Os.

Color and properties: Bluish, amorphous metal.

Constants: Specific gravity 22.48; melting-point 2500°C.

Soluble in nitric acid when finely divided; insoluble even in aqua regia when massive.

Derivation: Reduction of the oxide.

Grades: Technical.

Containers: Boxes.

Uses: Osmium salts; alloys.

Fire hazard: None.

Railroad shipping regulations: None.

Oxalic Acid. See Acid oxalic.

Oxammonium. See Hydroxylamine.

Oxammonium Hydrochloride. See Hydroxylamine hydrochloride.

Oxammonium Sulfate. See Hydroxylamine sulfate.

Oxgall. See Gall, Ox.

Oxidized Oil. See Blown oil.

"Oxi-Tan." The trade name for a tanning compound.

Oxone. See Sodium peroxide.

Oxyacetic Acid. See Acid glycolic.

Oxybenzaldehyde, Ortho-. See Acid salicylic.

Oxybenzoic Acid, Meta-. See Acid oxybenzoic, Meta-.

Oxybenzoic Acid, Para-. See Acid oxybenzoic, Para-.

Oxybutyric Acid, Beta. See Acid oxybutyric, Beta.

Oxybutyric Aldehyde. See Aldol.

Oxydase. See Enzymes, page 504.

Oxydimercurous-ammonium Nitrate. See Mercurous oxide, Black.

Oxydimethylquinizine. See Antipyrine.

Oxygen* O₂.

Color and properties: Colorless, odorless, tasteless gas, liquefiable at -190°C. into a slightly bluish liquid, which is solidifiable at -227°C. It constitutes four-fifths of the air.

Constants: (Gas) Specific gravity 1.10535; melting-point -227°C.; boiling-point -182.5°C.

Soluble in molten silver; slightly soluble in water.

Derivation: (a) From liquid air by fractionation to remove the other gases of the air, by "heating" the liquid air with cold compressed air, by gradual expansion and cooling of compressed air. (b) By electrolysis of water.

Impurities: Nitrogen, carbon dioxide, water vapor, ammonia, argon, helium and other rare gases.

Grades: Technical; Pure; U. S. P.

Containers: Steel drums; cylinders or "gas-bottles."

Uses: (a) With hydrogen or acetylene for production of exceedingly hot

flames for cutting and welding metals, including platinum. (b) For resuscitation in asphyxia and stimulation in various diseases. (c) In combustion to promote better utilization of fuel. (d) As a constituent of the explosive "oxyliquit." (e) Anesthesia.

Fire hazard: Dangerous.

Railroad shipping regulations: Green (gas) label.

Ozone:

An allotropic form of oxygen, the physical constants of which are such as to require the formula O_3 , is called ozone.

Properties: Ozone is a colorless gas, has a characteristic odor; powerful bleaching action; oxidizes more rapidly than oxygen and promotes spontaneous combustion of many substances.

Constants: Specific gravity (Gas) 1.658; melting-point: (Liquid) $-119^{\circ}C$; boiling-point: Decomposes at $270^{\circ}C$.

Soluble in water, oil of turpentine and oil of cinnamon.

Derivation: (a) By heating barium peroxide or potassium permanganate with strong sulfuric acid. This reaction should be performed with great caution. (b) By heating peroxides in a current of oxygen. (c) By passing air or oxygen through the blue zone produced by the discharge of high-tension electric currents.

Uses: Oxidizing agent; bactericide; bleaching waxes, oils, textiles, etc.

Oxygenium, U. S. P. See Oxygen.

Oxymel Scillæ, B. P. Oxymel of squill.

Oxymel Urginæ, B. P. Oxymel of urguinea.

Oxy-meta-methoxyallylbenzene, Para-
See Eugenol.

Oxy-meta-methoxyallylbenzol, Para-
See Eugenol.

Oxymethylene. See Formaldehyde.

Oxyphenic Acid. See Pyrocatechin.

Oxysuccinic Acid. See Acid malic.

Oxytoluene. See Cresol.

Oxytoluol. See Cresol.

Oxytricarballic Acid. See Acid citric.

Ozokerite* (Mineral wax; Fossil wax; Native paraffin).

Color and properties: A native, wax-like hydrocarbon mixture, yellow-brown to black or green in color, translucent when pure and having a greasy feel.

Constants: Specific gravity 0.85-0.95; melting-point 55° - $110^{\circ}C$., usually about $70^{\circ}C$.

Soluble in benzine, benzol, turpentine, kerosene, ether, carbon bisulfide; slightly soluble in alcohol; insoluble in water.

Derivation: Found in nature in Utah Wyoming and Galicia.

Method of purification: Filtration.

Grades: Technical.

Containers: Wooden boxes.

Uses: Electric insulation; rubber filler; paints; leather polish; sealing wax; candles; ink; electrotypers' wax; carbon paper.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Ozone. See Oxygen.

Ortho-oxytoluene. See Cresol, Ortho-.

Ortho-oxytoluol. See Cresol, Ortho-.

Ortho-phosphoric Acid. See Acid phosphoric.

Ortho-phthalic Acid. See Acid phthalic.

Ortho-toluidine-meta-sulfonic Acid. See Acid toluidine-meta-sulfonic, Ortho-.

Ortho-vanadic Acid. See Acid vanadic.

Ortho-xylene. See Xylol, Ortho-.

Ortho-xylol. See Xylol, Ortho-.

Osage Orange.*

Derivation: Bark of the shrub, native of U. S.

Grades: 25 per cent Tannin

Containers: Wooden barrels.

Uses: Textile industry; leather industry.

Fire hazard: None.

Railroad shipping regulations: None.

Osmic Acid. See Acid osmic, Anhydride.

Osmium* Os.

Color and properties: Bluish, amorphous metal.

Constants: Specific gravity 22.48; melting-point 2500°C.

Soluble in nitric acid when finely divided; insoluble even in aqua regia when massive.

Derivation: Reduction of the oxide.

Grades: Technical.

Containers: Boxes.

Uses: Osmium salts; alloys.

Fire hazard: None.

Railroad shipping regulations: None.

Oxalic Acid. See Acid oxalic.

Oxammonium. See Hydroxylamine.

Oxammonium Hydrochloride. See Hydroxylamine hydrochloride.

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Oxone. See Sodium peroxide.

Oxyacetic Acid. See Acid glycolic.

Oxybenzaldehyde, Ortho-. See Acid salicylic.

Oxybenzoic Acid, Meta-. See Acid oxybenzoic, Meta-.

Oxybenzoic Acid, Para-. See Acid oxybenzoic, Para-.

Oxybutyric Acid, Beta. See Acid oxybutyric, Beta.

Oxybutyric Aldehyde. See Aldol.

Oxydase. See Enzymes, page 504.

Oxydimercurous-ammonium Nitrate. See Mercurous oxide, Black.

Oxydimethylquinizine. See Antipyrine.

Oxygen* O₂.

Color and properties: Colorless, odorless, tasteless gas, liquefiable at -190°C. into a slightly bluish liquid, which is solidifiable at -227°C. It constitutes four-fifths of the air.

Constants: (Gas) Specific gravity 1.10535; melting-point -227°C.; boiling-point -182.5°C.

Soluble in molten silver; slightly soluble in water.

Derivation: (a) From liquid air by fractionation to remove the other gases of the air, by "heating" the liquid air with cold compressed air, by gradual expansion and cooling of compressed air. (b) By electrolysis of water.

Impurities: Nitrogen, carbon dioxide, water vapor, ammonia, argon, helium and other rare gases.

Grades: Technical; Pure; U. S. P.

Containers: Steel drums; cylinders or "gas-bottles."

Uses: (a) With hydrogen or acetylene for production of exceedingly hot

Color and properties: A yellowish, fatty oil, free of fatty acids when fresh; rapidly becoming rancid in air.

Chief constituents: Triolein (15 to 25 per cent), triglycerides of stearic; palmitic and myristic acids (33 per cent) and triglycerides of lauric, capric, caprylic and caproic acids (45 to 55 per cent).

Constants: Specific gravity 0.952; melting-point 26° - 30° C.; iodine number 13.4-13.6; saponification number 247.6.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: By crushing the nuts of *Elaeis guineensis* and pressing, or extracting with solvents.

Method of purification: Filtration.

Grades: Crude; refined.

Containers: Wooden kegs.

Uses: Manufacture of soaps and chocolate products; pharmacy.

Fire hazard: None.

Railroad shipping regulations: None

See also: Palm butter.

Palm Oil. See Palm butter.

Palmarosa Oil. See Geranium oil, Turkish.

Palmetto.*

Derivation: From *Sabal serrulata*, native in Florida and Georgia.

Grades: 25 per cent tannin.

Containers: Wooden barrels.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Palmitic Acid. See Acid palmitic.

Palmitinic Acid. See Acid palmitic.

Panama Bark. See Quillaja.

Panax. See Ginseng.

Pancreatin.*

Derivation: A mixture of the enzymes amylase, trypsin and lipase from the pancreas of warm blooded animals.

Color and properties: Yellowish, amorphous powder.

Partially soluble in water; insoluble in alcohol.

Grade: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine; pharmacy.

Fire hazard: None.

Railroad shipping regulations: None.

Pancreatinum, U. S. P. See Pancreatin.

Papain* (Papayotin; Vegetable pepsin).

Derivation: An enzyme similar to pepsin, the concentrated active principal of the juice of the fruit and leaves of *Carica papaya*.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Papaver* (Poppy heads; Poppy capsules).

Derivation: Capsules and seeds of *Papaver sonniferum*.

Habitat: Europe and Asia.

Grades: Technical.

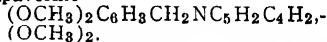
Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Papaverine*



Color and properties: White crystalline alkaloid; poisonous.

Constants: Melting-point 147° C.

Soluble in chloroform and hot benzol; slightly soluble in alcohol and ether; insoluble in water.

Derivation: From opium.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine, as such or as the hydrochloride which is soluble in water.

Fire hazard: None.

Railroad shipping regulations: None.

Papaw* (Carica; Pawpaw; Papaya).

Derivation: Leaves of *Carica papaya*.

Grades: Technical.

Containers: Bags.

Uses: Manufacture of carpaine and papaine; digestant.

Fire hazard: None.

Railroad shipping regulations: None.

Papaya. See Papaw.

Paprika.

Derivation: A sweetish condiment made from common pepper, much used by Hungarians.

Para-acetanisidin. See Methacetin, page 506.

Para-acetphenetidin. See Acetphenetidine.

Para-aminobenzoic Acid. See Acid para-aminobenzoic.

Para-aminobenzenesulfonic Acid. See Acid sulfanilic, Para-, page 503.

Para-aminobenzolsulfonic Acid. See Acid sulfanilic, Para-, page 503.

Para-aminodimethylaniline. See Dimethyl-para-phenylenediamine.

Para-aminodiphenylimide. See Aminoazobenzene.

Para-aminophenylarsinic Acid. See Acid arsanilic.

Para-aminosalicylic Acid. See Acid para-aminosalicylic.

Para-aminotoluene. See Toluidine, Para-.

Para-aminotoluol. See Toluidine, Para-.

Para-anilinesulfonic Acid. See Acid sulfanilic, Para-, page 503.

Para-chloronitrobenzene. See Chloronitrobenzene, Para-.

Para-chloronitrobenzol. See Chloronitrobenzene, Para-.

Para- Compounds. Para- compounds are substitution products derived from ben-

zol in which the substituting radicals or groups are (constitutionally) placed in certain definite positions in the benzene nucleus. See also: Meta- compounds and Ortho- compounds. The Para- compounds will be found under the name of the compound, as: Para-cresol, see Cresol, Para-; Para-toluidine, see Toluidine, Para-, etc.

Para-coumarone (Resin)* (Coumarone resin; Cumaron resin; Benzofurane resin; "Cumar") $C_6H_4.CH.O.CH$.

Color and properties: A resinous body varying from pale yellow to dark red-brown in color. Consists of a mixture of para-coumarone, para-indene, meta-styrene, etc., depending upon its source.

Constants: Specific gravity 1.05-1.10; melting-point 45° - $200^{\circ}C$., depending upon source; boiling-point: Decomposes at about $250^{\circ}C$.

Soluble in ether, coal-tar and petroleum solvents, turpentine, pyridine, acetone, carbon bisulfide and carbon tetrachloride; insoluble in water and alcohol.

Derivation: Polymerization of solvent naphtha by means of heat or mineral acids.

Method of purification: Removal of volatile oils by distillation.

Impurities: Unpolymerized coumarone and indene; inorganic matter.

Grades. Varying in consistency from soft and gummy to hard and brittle, and from dark to light in color, according to degree of purification.

Containers: Cans; barrels; boxes.

Uses: Compounding rubber goods; chicle substitutes for chewing gum, etc.; paints, varnishes and enamels; manufacture of molded goods; insulating materials.

Fire hazard. None.

Railroad shipping regulations: None

Para-cresol. See Cresol, Para-.

Para-cresotic Acid. See Acid cresotic.

Para-cresotinic Acid. See Acid cresotic

Para-cresylic Acid. See Cresol, Para-.

Para-cymene. See Cymene.

Para-cymol. See Cymene.

Para-diaminobenzene. See Phenylenediamine, Para-.

Para-diaminobenzol. See Phenylenediamine, Para-.

Para-diaminophenol. See Benzidine.

Para-dioxybenzene. See Hydroquinone.

Para-dioxybenzol. See Hydroquinone.

Para-dichlorobenzene. See Dichlorobenzene, Para-.

Para-dichlorobenzol. See Dichlorobenzene, Para-.

Paraform. See Formaldehyde.

Paraformaldehyde. See Formaldehyde.

Paraformaldehydum, U. S. P. See Formaldehyde.

Paraiba. See Simaruba bark.

Para-indene. See Para-coumarone.

Paraldehyde* (C_2H_4O)₃.

Color and properties: Water-white liquid; pleasant odor; sharp burning taste. Does not respond to the reactions for aldehydes.

Soluble in water.

Constants: Specific gravity 0.9943; melting-point $12.55^{\circ}C$; crystallizes below $10.5^{\circ}C$; boiling-point $124^{\circ}C$.

Derivation: Polymerizing action of mineral acid, sulfur dioxide or zinc chloride on acetaldehyde.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums; glass bottles.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Paraldehydum, U. S. P., B. P. See Paraldehyde.

Para-mandelic Acid. See Acid amygdalic.

Para-methoxybenzaldehyde. See Anisic aldehyde.

Para-methylbenzene. See Xylol, Para-.

Para-methylbenzol. See Xylol, Para-.

Para-methylpropylbenzene. See Cymene.

Para-methylpropylbenzol. See Cymene.

Para-methylphenol. See Cresol, Para-.

Para-morphine. See Thebaine.

Para-nephrine.*

Color and properties: Yellow, very hygroscopic, friable mass; the constituent of the suprarenal glands which raises the blood pressure.

Soluble in water and methyl alcohol; insoluble in alcohol and ether.

Derivation: By extraction from suprarenal capsules, without the use of acids or alkalis.

Impurities: Albumoses and peptones.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; dentistry.

Fire hazard: None.

Railroad shipping regulations: None.

Para-nitraniline. See Nitraniline, Para-.

Para-nitroaniline. See Nitraniline, Para-.

Para-nitrophenol. See Nitrophenol, Para-.

Para-nitrotoluene. See Nitrotoluene, Para-.

Para-nitrotoluol. See Nitrotoluene, Para-.

Para-oxy-meta-methoxyallylbenzene. See Eugenol.

Para-oxy-meta-methoxyallylbenzol. See Eugenol.

Para-oxymethylacetanilide. See Methacetin, page 506.

Para-oxytoluene. See Cresol, Para-.

Para-oxytoluol. See Cresol, Para-.

Para-peptone. See Syntonin.

Para-phthalein. See Phenolphthalein.

Para-rosolic Acid. See Acid rosolic.

Para-tartaric Acid. See Acid racemic.

Para-toluic Acid. See Acid toluic, Para-.

Para-xylene. See Xylol, Para-.

Para-xlenol. See Xylenol.

Para-xylol. See Xylol, Para-.

Paradise Plant. See Mezereum.

Paradise Seed. See Amomum melegueta.

Paradise Tree. See Simaruba bark.

Paraffin, Native. See Ozokerite.

Paraffin Oil.*

Color and properties: Yellowish-brown; brown-red to dark green liquid.

Constants: Specific gravity 30°-20° Be; flash-point 300°-450°F.

Derivation: Lubricating oils made by dry distillation.

Method of purification: Filtration.

Grades: Dependent on viscosity; B. P.

Containers: Tank cars; barrels.

Uses: Lubricant; leather dressing; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

In certain countries and localities kerosene is known as paraffin oil.

Paraffin Scale. See Paraffin wax.

Paraffin Wax* (a) Hard; (b) Soft (Paraffin scale; Ceresin).

Color and properties: White translucent, waxy, tasteless, odorless solid; consisting of a mixture of solid hydrocarbons chiefly of the methane series. Before purification it is known as paraffin scale.

Constants: Specific gravity 0.880-0.915; melting-point 42°-60°C.

Soluble in benzene, benzol, chloroform, turpentine, carbon bisulfide and olive oil; insoluble in water and acids.

Derivation: (a) Paraffin oil distillate is chilled and filter pressed or chilled, sweated and melted. (b) Treatment of ozokerite with sulfuric acid and bleaching.

Method of purification: Filtration through clay or bone-black.

Impurities: Moisture; oil.

Grades: Yellow crude scale; white scale; refined wax; U. S. P.; B. P.

Containers: Wooden boxes; card-board boxes.

Uses: Manufacture of paraffin candles, waxed paper, etc.; waterproofing wood, cork, etc.; impregnating matches; stearine candles; lubricants; preserving eggs; medicine; oil crayons.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Paraffinum, U. S. P., B. P. See Paraffin wax.

Paraffin Durum, B. P. See Paraffin wax.

Paraffinum Liquidum, B. P. See Paraffin oil.

Paraffinum Molle, B. P. See Paraffin wax.

Pareira (Pareira brava; Abutua).

Derivation: Dried root of *Chondrodendron tomentosum*.

Habitat: Brazil and Peru.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Paris Blue. See Ferric ferrocyanide.

Para-cymene. See Cymene.

Para-cymol. See Cymene.

Para-diaminobenzene. See Phenylenediamine, Para-.

Para-diaminobenzol. See Phenylenediamine, Para-.

Para-diaminophenol. See Benzidine.

Para-dioxybenzene. See Hydroquinone.

Para-dioxybenzol. See Hydroquinone.

Para-dichlorobenzene. See Dichlorobenzene, Para-.

Para-dichlorobenzol. See Dichlorobenzene, Para-.

Paraform. See Formaldehyde.

Paraformaldehyde. See Formaldehyde.

Paraformaldehydum, U. S. P. See Formaldehyde.

Paraiba. See Simaruba bark.

Para-indene. See Para-coumarone.

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Color and properties: Water-white liquid; pleasant odor; sharp burning taste. Does not respond to the reactions for aldehydes.

Soluble in water.

Constants: Specific gravity 0.9943; melting-point $12.55^{\circ}C$; crystallizes below $10.5^{\circ}C$; boiling-point $124^{\circ}C$.

Derivation: Polymerizing action of mineral acid, sulfur dioxide or zinc chloride on acetaldehyde.

Grades: Technical; U. S. P.; B. P.

Containers: Iron drums; glass bottles.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Paraldehydum, U. S. P., B. P. See Paraldehyde.

Para-mandelic Acid. See Acid amygdalic.

Para-methoxybenzaldehyde. See Anisic aldehyde.

Para-methylbenzene. See Xylol, Para-.

Para-methylbenzol. See Xylol, Para-.

Para-methylpropylbenzene. See Cymene.

Para-methylpropylbenzol. See Cymene.

Para-methylphenol. See Cresol, Para-.

Para-morphine. See Thebaine.

Para-nephrine.*

Color and properties: Yellow, very hygroscopic, friable mass; the constituent of the suprarenal glands which raises the blood pressure.

Soluble in water and methyl alcohol; insoluble in alcohol and ether.

Derivation: By extraction from suprarenal capsules, without the use of acids or alkalis.

Impurities: Albumoses and peptones.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; dentistry.

Fire hazard: None.

Railroad shipping regulations: None.

Para-nitraniline. See Nitraniline, Para-.

Para-nitroaniline. See Nitraniline, Para-.

Para-nitrophenol. See Nitrophenol, Para-.

Para-nitrotoluene. See Nitrotoluene, Para-.

Para-nitrotoluol. See Nitrotoluene, Para-.

Para-oxy-meta-methoxyallylbenzene. See Eugenol.

Para-oxy-meta-methoxyallylbenzol. See Eugenol.

Method of purification: Bleaching with fullers' earth or carbon. Hot pressed oil is frequently allowed to stand to deposit stearine (which it will do even at ordinary temperatures) and then filtered.

Grades: Oriental oil means oil imported from the Orient, differing to some extent from the domestic production. Oriental oil is stated to be "edible" when it contains less than 2 per cent free fatty acids and is of a light yellow color. "Off grade" oil is much darker in color and contains over 2 per cent free fatty acids. The New York Produce Exchange chemists define "crude" peanut oil as oil in which the free fatty acids are below 2 per cent and moisture and solid impurities below 0.5 per cent. "Prime crude" is oil that will yield "prime yellow refined" peanut oil on treatment with caustic soda. Refined peanut oil is graded as "choice," "prime yellow" and "good off." The "choice" refined peanut oil must not contain more than 0.1 per cent free fatty acids; The "prime yellow" must not contain more than 0.2 per cent free fatty acids and the color must not be deeper than 50 yellow and 5 red on the Equivalent Color Scale. The "good off" oil must conform to the same color and general requirements as "prime yellow" but may contain free fatty acids up to 0.25 per cent.

Containers: Wooden barrels.

Uses: Substitute and adulterant for olive oil; edible oils; soaps.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Peanut Ore. See Wolframite.

Pearlash. See Potassium carbonate.

Pearl Moss. See Chondrus.

Pear Oil. See Amyl acetate.

Pearl White. See Bismuth subcarbonate or Bismuth subnitrate.

Peat.

Derivation: Partly decayed vegetable

matter which has accumulated in marshes and wet places. It is dried in the form of blocks, or briquetted and used as fuel.

Occurs in the United States and Canada in many localities.

Pectinose. See Arabinose.

"Pegamoid." A proprietary brand of aluminum paint.

Pegmatite (Giant granite). A rock consisting of the same constituents as ordinary granite, namely, quartz, feldspar and mica, but irregular in texture and composed of the constituent minerals in such large size that they can be differentiated. In addition to its use as a building stone, pegmatite is often a source of lithia, zircon, tin, tungsten, tantalum, tourmaline, uranium, etc.

Pegu Catechu. See Catechu.

Pelletierine Tannas, U. S. P., B. P. Pelletierine tannate.

Pencil Stone. See Pyrophyllite.

"Penetrol." The proprietary name for a compound used as a textile detergent.

"Pennalene White Oil." A water-white, odorless oil used for medicinal purposes.

Pennyroyal. See Hedeoma.

Pennyroyal Oil. See Hedeoma oil.

Pental. See Amylene.

Pentane* (Amyl hydride; Normal and isopentane) $\text{CH}_3(\text{CH}_2)_3\text{CH}_3$.

Color and properties: A colorless, mobile, inflammable liquid; pleasant odor.

Constants: Normal: Specific gravity 0.6454; melting-point -130.8°C .; boiling-point 30.4°C .; solidifying point -200°C . Iso: Specific gravity 0.622; boiling-point, 30.4°C .

Soluble in hydrocarbons, oils and ether; very slightly soluble in alcohol; insoluble in water.

Derivation: Fractional distillation from petroleum.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; iron drums.

Uses: Anesthetic; artificial ice manufacture; filling low-temperature thermometers; lubricant for Claude liquid air machine.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Pentase. See Enzymes, page 504.

Pentene. See Amylene.

Pentiformic Acid. See Acid caproic.

Pentoic Acid, Primary. See Acid valeric, Iso.

Pepo* (Pumpkin seed).

Derivation: Ripe seed of *Cucurbita pepo*.

Habitat: Southern Asia; Europe and North America.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine; extraction of oil.

Fire hazard: None.

Railroad shipping regulations: None.

Pepper. See Piper.

Pepper, African. See Capsicum.

Pepper, Bird. See Capsicum.

Pepper, Jamaica. See Pimenta, page 507.

Pepper Oil* (Black-pepper oil).

Color and properties: Yellowish, liquid, volatile oil.

Chief known constituents: Phellandrene, cadinene, dipentene.

Constants: Specific gravity 0.870-0.905; optical rotation -5 to +12.

Soluble in alcohol, ether and chloroform.

Derivation: From common pepper, *Piper nigrum*, by extraction and evaporation of the solvent.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Pepper, Red. See Capsicum.

Peppermint* (Brandy mint; Lamb mint).

Derivation: Dried leaves and flowering tops of *Mentha piperita*.

Habitat: Asia, Europe and North America.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine; peppermint oil; menthol.

Fire hazard: None.

Railroad shipping regulations: None.

Peppermint-camphor. See Menthol.

Peppermint Oil (*Oleum mentha piperitae*).

Color and properties: Colorless or slightly yellowish, volatile, liquid oil; darkening in color and thickening in consistency on being exposed to the air for some time; very strong, aromatic, minty odor and taste, the latter being followed by a sensation of coolness.

Chief constituent: Menthol, varying in amount from 45 per cent to 91 per cent according to country of origin. Other constituents: esters of menthol, cineol, menthone, pinene, limonene, etc.

Constants: Specific gravity 0.895-0.921; optical rotation -6 to -43.

Soluble in alcohol, ether and chloroform.

Derivation: By distilling the leaves and flowering tops of the peppermint plant, *Mentha piperita*.

Method of purification: Rectification.

Grades: Technical; U. S. P.

Containers: Iron drums; tins; glass bottles.

Uses: Medicine; pharmacy; tooth-powders and pastes; mouth-washes; manufacture of liqueurs; raw material for production of menthol; confectionery; flavoring; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Pepsin.*

Color and properties: White or yellow-

ish white powder; converts proteins into albumoses and peptones. Soluble in water.

Derivation: Proteolytic ferment or enzyme from the glandular layer of fresh hogs' stomachs.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles; tins.

Uses: Medicine; pharmacy; substitute for rennet in cheese making.

Fire hazard: None.

Railroad shipping regulations: None.

Pepsinum, U. S. P., B. P. See Pepsin.

Peptone.*

Color and properties: (a) From albumin: White or pale yellow, amorphous powder.

(b) From meat: Light-brown, amorphous powder. The albuminoid or protein formed by the digestion of albumin.

Soluble in water; insoluble in alcohol

Derivation: (a) By digestion of egg albumin by pepsin and a small quantity of dilute hydrochloric acid at 38° to 40°C. (body temperature).

(b) By digestion of red meat with pancreatin at body temperature.

Grades: Technical.

Containers: Boxes; glass bottles.

Uses: Preparation of nutrient media in bacteriology; nutrient.

Fire hazard: None.

Railroad shipping regulations: None.

Perborin. See Sodium perborate.

Perchloric Acid. See Acid perchloric.

Perchloroethane. See Carbon trichloride.

Perchloroethylene. See Tetrachloroethylene.

Perchloromethane. See Carbon tetrachloride.

Perhydrol. See Hydrogen peroxide.

Perilla Oil.

Color and properties: Light yellow liquid.

Constants: Specific gravity 0.932-0.945;

saponification value 191-193; iodine value 187-202; refractive index 1.4841.

Soluble in alcohol, ether, chloroform, benzene and carbon bisulfide.

Derivation: From the seeds of *Perilla ocimoides*.

Impurities: Sometimes adulterated with cotton-seed oil.

Habitat: China, Japan and Northern India.

Grades: Technical.

Containers: Wooden barrels.

Uses: Substitute for linseed oil in printer's ink, varnish, etc.; edible oil in Japan, China, India, etc.; manufacture of cheap varnishes; artificial leather.

Fire hazard: None.

Railroad shipping regulations: None.

Periodic Acid. See Acid periodic.

Permanent White. See Barium sulfate.

"Permutit." An artificial zeolite used for water purification.

Pernambuco. See Lima wood.

Perosmic Anhydride. See Acid osmic. Anhydride.

Perosmic Oxide. See Acid osmic, Anhydride.

Peroxide. See Hydrogen peroxide.

Persian Bark. See Cascara sagrada bark.

Persian Berries. See Frangula.

Persian Red. Lead chromate, Basic.

Persio. See Orchil, page 506

Persoz's*Reagent. A reagent for the detection of silk in presence of wool. Zinc chloride 10g. dissolved in Water 10cc., add Zinc oxide 2 g. and shake. If this solution is warmed to 45°C., it will dissolve silk, but not wool.

Peru Apple. See Stramonium.

Perugene. Synthetic Peru balsam.

Peruvian Bark. See *Cinchona bark*, Calisaya.

Pescola Oil. Proprietary name for an oil used in the tanning industry.

Petit-grain Oil.

Color and properties: Yellowish liquid; odor similar to neroli oil.

Constants: Specific gravity 0.887-0.900.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: Distilled from the leaves and unripe fruit of *Citrus bigaradia*.

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

"Petalol." A proprietary name for liquid petrolatum.

"Petro." A proprietary name for liquid petrolatum.

Petrol. See Gasoline and Benzine.

Petrolatum* (Vaseline; Mineral fat; Petroleum jelly; Cosmoline; Petroleum ointment; Saxoline).

Color and properties: The more or less purified residue from the distillation of petroleum; light yellow to amber-colored gelatinous, oily, translucent, semi-solid, amorphous mass whose consistency varies with the temperature, consisting of a mixture of various hydrocarbons, chiefly of the methane series; tasteless and odorless when pure.

Constants: Specific gravity 0.820-0.850; melting-point 45°-48°C.

Soluble in chloroform, ether, benzene, carbon bisulfide, benzol and oils; very slightly soluble in alcohol; insoluble in water.

Derivation: By fractional distillation of still residues from the steam distillation of paraffin-base petroleum, or from steam-reduced amber crudes (oils from which the light fractions have been removed).

Method of purification: Filtration

through animal charcoal or fullers' earth, while hot.

Grades: Natural petrolatum produced as above; artificial petrolatums made by mixing heavy petroleum lubricating oil with a low melting point paraffin wax; U. S. P.

White petrolatum (White vaseline, Albolene) is made from the ordinary petrolatum by bleaching.

Containers: Glass bottles; tins; barrels.

Uses: Medicine; pharmacy; modeling clay; shoe polishes; lubricating greases; metal polishes; leather grease; lubricant; rust preventative; perfume extractor.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Petrolatum Album, U. S. P. See Petrolatum.

Petrolatum, Liquid* (Paraffin oil).

Color and properties: A colorless oily liquid.

Constants: Specific gravity 0.840-0.940.

Soluble in ether, chloroform, carbon bisulfide, benzene, benzol and boiling alcohol; insoluble in water and cold alcohol.

Derivation: Distillation of that portion of petroleum boiling between 330° and 390°C., after removal of the lighter constituents.

Method of purification: Treatment with sulfuric acid; then with caustic soda, followed by filtration, while hot, through bone-black; on cooling, some solid paraffins separate out, the liquid portion is distilled and only that portion boiling above 360°C. retained.

Grades: Technical.

Containers: Wooden barrels; tins; glass bottles.

Uses: Medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Petrolatum Liquidum, U. S. P. See Petrolatum.

Petrolene. See Asphalt

Petroleum* (Mineral oil; Naphtha; Rock oil; Crude oil).

Color and properties: A thick, heavy, inflammable liquid, varying in color from yellow to dark reddish-brown or black according to its place of origin. It has a peculiar distinct heavy odor also varying with its place of origin and composition. It usually shows a distinct greenish fluorescence.

Constants: Specific gravity 0.780-0.970.

Derivation: All petroleum is mixtures of hydrocarbons, as many as one hundred and fifty different hydrocarbons having been found in the different crude oils. The important constituents are: benzene, gasoline, kerosene (solar oil), paraffin, petrolatum (vaseline), petroleum ether, ligroin, petroleum, heavy lubricating oils, etc. Crude petroleum is separated into its constituents by fractional distillation with subsequent chemical purification of the individual fractions, followed by redistillation.

Containers: Tank cars; barrels.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Petroleum Asphalt. See Asphalt.

Petroleum Coke. See Coke.

Petroleum Ether* (Canadol).

Color and properties: A mixture of several of the lighter constituents of petroleum (cymogene, rhigoline and gasoline).

Constants: Specific gravity 0.635-0.660; boiling-point 40°-70°C.

Derivation: By fractional distillation of petroleum.

Method of purification: Washing with sulfuric acid, then with soda and redistilling.

Grades: Technical; pure.

Containers: Tin cans; iron drums.

Uses: Solvent.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Petroleum Jelly. See Petrolatum.

Petroleum Naphtha. See Benzene.

Petroleum Ointment. See Petrolatum.

Petroselinum* (Parsley).

Derivation: Herb, root and seed of Petroselinum sativum.

Habitat: Europe; cultivated everywhere.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine; cooking.

Fire hazard: None.

Railroad shipping regulations: None.

Petzite. A natural telluride of silver and gold, $(\text{Ag,Au})_2\text{Te}$, containing 18 to 25 per cent of gold and 40 to 47 per cent of silver. Found in California and Colorado.

Pewter. An alloy consisting of tin with a small amount of antimony.

Phalaris. Canary seed.

Pharbitis Seeds. See Kaladana.

Pharbitisin. See Kaladana resin.

Phaseolus. Haricot, Common bean or French string-bean.

Phenacite. Glucinum orthosilicate, Gl_2SiO_4 , found in Colorado.

Phenacetin. See Acetphenetidine.

Phenacetinum, B. P. See Acetphenetidine.

Phenanthraquinone. See Phenanthrene-quinone.

Phenanthrene* (Ortho-diphenyleneethyl-ene; Phenanthrin) $(\text{C}_8\text{H}_4\text{CH})_2$.

Color and properties: Small, colorless, shining crystals.

Constants: Specific gravity 1.063; melting-point 100.35°C.; boiling-point 340°C.

Soluble in alcohol, ether, benzol, carbon bisulfide and acetic acid; insoluble in water.

Derivation: Fractional distillation of

high-boiling coal-tar oils, with subsequent recrystallization from alcohol. Method of purification: Fractional oxidation (chromic or nitric acid) to remove anthracene.

Impurities: Anthracene.

Grades: Technical.

Containers: Tins.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Phenanthrenequinone* (Erroneously:

Phenanthraquinone)

$C_6H_4CO_2.CO_2C_6H_4$.

Color and properties: Yellow-orange, needle-like crystals.

Constants: Specific gravity 1.4045; melting-point $202^\circ C$.; boiling-point: Sublimes above $360^\circ C$.

Soluble in sulfuric acid, benzol, glacial acetic acid and hot alcohol; slightly soluble in ether; insoluble in water.

Derivation: By oxidation of a boiling solution of phenanthrene in glacial acetic acid with chromic acid, solution in sodium bisulfite, precipitation by means of hydrochloric acid and recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic synthesis; dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Phenanthrin. See Phenanthrene.

Phenazone. See Antipyrine.

Phenazonum, B. P. See Antipyrine.

Phenol* (Carbolic acid, Phenic acid, Phenylic acid, Phenyl hydrate, Hydroxybenzene) C_6H_5O .

Color and properties: White, crystalline mass, turns pink or red if not perfectly pure, absorbs water from the air and liquefies; sharp burning taste; distinctive odor; strong, corrosive poison. When in weak solution it has a sweetish taste.

Constants: Specific gravity 1.0677; melting-point 42.5° - $43^\circ C$.; boiling-point $182.6^\circ C$.

Soluble in alcohol, water, ether, chloroform, glycerine and alkalis.

Derivation: (a) By treating the coal-tar oil fraction boiling between 170° and $230^\circ C$., with caustic soda to form phenolate; the solution is purified by steam to remove naphthalene, treated with acid to set phenol free and purified by distillation.

(b) Benzol is converted into the sulfonic acid and the latter fused with caustic soda. On treating the sulfonate with acid, pure phenol is liberated.

Method of purification: Dissolved in water, crystallized out, centrifuged and redistilled.

Impurities: Cresols; water.

Grades: Fused, U. S. P.; Crystals, U. S. P.; synthetic; crude; liquid, U. S. P. (cresol and phenol); B. P.

Uses: Antiseptic; medicine; dentistry; manufacture of picric acid, salicylic acid, phenacetin and various intermediates for the production of dyestuffs; paint and varnish removers; synthetic resins and plastics; phenates.

Fire hazard: None.

Railroad shipping regulations: None.

"Phenolax." See Phenolphthalein.

Phenol-bismuth. See Bismuth phenate.

Phenoldisulfonic Acid. See Acid phenoldisulfonic.

Phenol Liquefactum, U. S. P. Liquefied phenol.

Phenolphthalein* (Dioxytriphenylcarbinolcarboxylic acid anhydride, "Phenolax") $(C_6H_4OH)_3CO.CO_2C_6H_4CO$.

Color and properties: A pale yellow, crystalline powder; forms an almost colorless solution in neutral or acid solution and a bright purple-carmine solution in presence of alkali, but colorless in the presence of large amounts of alkali.

Constants: Specific gravity 1.2765; melting-point 250° - $253^\circ C$.

Soluble in alcohol, ether and alkalis; insoluble in water.

Derivation: Fused phenol is added to

phthalic acid anhydride dissolved in concentrated sulfuric acid (cooled) and the whole heated 10 to 12 hours, then poured hot into boiling water and boiled with repeated changes of water. The residue is dissolved in warm dilute caustic soda and precipitated with acetic acid.

Method of purification: Recrystallization from absolute alcohol after filtering through animal charcoal.

Impurities: Phenol; phthalic acid.

Grades: Technical; pure reagent; U. S. P.; B. P.

Containers: Glass bottles; wooden kegs; tins.

Uses: Dyestuffs; indicator in volumetric analysis; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Phenolphthaleinum, U. S. P., B. P. See Phenolphthalein.

Phenol Salicylate. See Salol.

Phenol Trinitrate. See Acid picric.

Phenylacetaldehyde* (Ethylalbenzene)
 $C_6H_5CH_2CHO$.

Color and properties: Colorless liquid; very strong hyacinth-like odor.

Constants: Specific gravity 1.0315; melting-point; Below $-10^{\circ}C$; boiling-point $193^{\circ}-194^{\circ}C$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: From phenyl-alpha-chloroacetic acid, by action of alkalis, or by heating phenyllactic acid with dilute sulfuric acid.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylacetamide. See Acetanilide.

Phenylacetic Acid. See Acid phenylacetic.

Phenylacetic Acid Nitrile. See Benzyl cyanide.

Phenylamine. See Aniline.

Phenylaniline. See Diphenylamine.

Phenylbenzamide. See Benzanilide.

Phenylbenzoylcarbinol. See Benzoin.

Phenylboric Acid. See Acid borophenylic.

Phenylcarbonylamine Chloride*
 $C_6H_5NCCl_2$. A military poison gas used in the late war.

Phenyl Chloride. See Chlorobenzene, Mono.

Phenylcinchonine Acid. See Acid phenylcinchonine.

Phenyl Cyanide. See Benzonitrile.

Phenyldimethylpyrazole. See Antipyrine.

Phenylene. See Antipyrine.

Phenylenediamine* (a) Ortho-; (b) Meta-; (c) Para-; $C_6H_4(NH_2)_2$.

Color and properties: (a) Colorless crystals.

(b) Colorless needles; unstable in air; usually in the form of the stable hydrochloride.

(c) Colorless crystals, blackening somewhat in air; poisonous.

| Constants: | (a) | (b) | (c) |
|------------------|----------------------------|----------------------------|----------------|
| Specific gravity | | 1.1380 | |
| Melting-point | $102^{\circ}-103^{\circ}C$ | $63^{\circ}C$ | $140^{\circ}C$ |
| Boiling-point | $256^{\circ}-258^{\circ}C$ | $282^{\circ}-284^{\circ}C$ | $267^{\circ}C$ |

Soluble in alcohol, ether and water.

Derivation: Reduction of ortho-, meta- or para-dinitrobenzenes or nitranilines with iron and hydrochloric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Barrels; tins.

Uses: (a) No practical use.

(b) Dyestuff manufacture; reagent for detecting nitrous acid.

(c) Dyeing hair; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylethyl Alcohol. See page 507.

Phenylethylene. See Styrene.

Phenylformamide. See Formanilide.

Phenylformic Acid. See Acid benzoic.

Phenylglucosazone* $C_{18}H_{22}N_4O_4$.

Color and properties: Thin, yellow, needle-like crystals.

Constants: Melting-point $217^{\circ}C$.

Soluble in alcohol; very slightly soluble in water.

Derivation: By condensation of phenylhydrazine hydrochloride and glucose with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylglycolic Acid. See Acid amygdalic.

Phenylhydrazine* $C_6H_5HN.NH_2$.

Color and properties: Pale yellow crystals or oily liquid; becomes red-brown on exposure to air; poisonous.

Constants: Specific gravity 1.0978; melting-point $19.35^{\circ}C$; boiling-point $243.5^{\circ}C$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: Aniline is diazotized and then reduced, producing the hydrochloride, which is decomposed by caustic soda and dissolved in ether. The ethereal solution is dried and the ether evaporated.

Method of purification: Vacuum distillation.

Grades: Commercial; C. P.; reagent.

Containers: Glass bottles; tins.

Uses: Reagent in analytical chemistry, for detecting aldehydes, sugars, etc.; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylhydrazine Hydrochloride*

$C_6H_5NHNH_2.HCl$.

Color and properties: Colorless, crystalline scales; sublimable, if cautiously heated.

Soluble in water, alcohol and ether.

Derivation: Treatment of phenylhydrazine with hydrochloric acid.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry for differentiation of sugars; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylhydroxyacetic Acid. See Acid amygdalic.

Phenylic Acid. See Phenol.

Phenylis Salicylas, U. S. P. See Salol

Phenylisothiocyanate. See Phenylmustard oil.

Phenylmethane. See Toluol.

Phenylmustard Oil* (Thiocarbamil; Phenylisothiocyanate; Phenylthiocarbonylimide) C_6H_5NCS .

Color and properties: A pale yellow liquid; penetrating irritating odor; readily volatilized with steam.

Constants: Specific gravity 1.1382; melting-point $-21^{\circ}C$; boiling-point $221^{\circ}C$. Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By action of concentrated hydrochloric acid on sulfocarbamilide; (b) By reaction of thiophosgene with aniline.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylnaphthylamine* (a) Phenyl-alpha-naphthylamine; (b) Phenyl-beta-naphthylamine. $C_{10}H_7.NH.C_6H_5$.

Color and properties: (a) Crystalline

prisms or scales; (b) Crystal needles.
Constants: Melting-point: (a) 62°C; (b) 107.5°-108°C.

Boiling-point (a) 226°C.; (b) 395°-399.5°C.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating the hydrochlorides of alpha- and beta-naphthylamines with aniline and zinc chloride.

Method of purification: Crystallization.
Grades: Technical.

Containers: Glass bottles.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylnaphthylamine, Alpha-*

$C_{10}H_7NH.C_6H_5$.

Color and properties: Colorless needles or crystals.

Constants: Melting-point 62°C; boiling-point 335°C.

Soluble in alcohol and ether; insoluble in water.

Derivation: By heating alpha-naphthol, aniline and aniline hydrochloride to a high temperature.

Method of purification: Crystallization.
Grades: Technical.

Containers: Wooden barrels; kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylone. See Antipyrine.

Phenylpropionic Acid. See Acid phenylpropionic.

Phenyl Salicylate. See Salol.

Phenylthiocarbonimide. See Phenylmustard oil.

Phloridzin* (Phlorizin; Phlorrhizin)

$C_{21}H_{24}O_{10}.2H_2O$.

Color and properties: Light, white, small, silky needles; sweet taste and a bitter after-taste; poisonous.

Constants: Specific gravity 1.4298; melting-point 109°C., solidifies and then does not melt until a temperature of 170°C. is reached.

Soluble in alcohol and hot water; very slightly soluble in ether.

Derivation: By extraction of the glucoside from the root-bark of apple, pear, plum and cherry trees.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; biochemical experimentation.

Fire hazard: None.

Railroad shipping regulations: None.

Phloroglucinol* (Trioxybenzene, Phloroglucine) $C_6H_3(OH)_3.2H_2O$.

Color and properties: White to yellowish crystals.

Constants: Melting-point 217°-219°C., if rapidly heated; 200°-209°C., if slowly heated.

Soluble in alcohol and ether; slightly soluble in water.

Derivation: By fusion of resorcinol with caustic soda.

Method of purification: Crystallization.
Impurities: Resorcinol; diresorcinol.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: In analytical chemistry as a reagent for pentoses and with vanillin for determining the presence of free hydrochloric acid; medicine; decalcifying agent for bones.

Fire hazard: None.

Railroad shipping regulations: None.

Phosgene. See Carbonyl chloride.

Phosgene, Di-. See Trichloromethylchloroformate.

Phosphate Rock. A natural rock consisting largely of calcium phosphate used as a raw material for manufacture of acid phosphate.

Phosphine* (Hydrogen phosphide; Phosphuretted hydrogen) PH_3 .

Color and properties: Colorless; spontaneously inflammable gas; disagreeable, garlic-like odor; exceedingly poisonous.

Constants: Specific gravity 1.185; melting-point -133.5°C.; boiling-point -85°C.

Soluble in alcohol, ether and cuprous chloride; slightly soluble in cold water; insoluble in hot water.

(b) Dyestuff manufacture; reagent for detecting nitrous acid.

(c) Dyeing hair; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylethyl Alcohol. See page 507.

Phenylethylene. See Styrene.

Phenylformamide. See Formanilide.

Phenylformic Acid. See Acid benzoic.

Phenylglucosazone* $C_{18}H_{22}N_4O_4$.

Color and properties: Thin, yellow, needle-like crystals.

Constants: Melting-point $217^{\circ}C$.

Soluble in alcohol; very slightly soluble in water.

Derivation: By condensation of phenylhydrazine hydrochloride and glucose with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylglycolic Acid. See Acid amygdalic.

Phenylhydrazine* $C_6H_5HN.NH_2$.

Color and properties: Pale yellow crystals or oily liquid; becomes red-brown on exposure to air; poisonous.

Constants: Specific gravity 1.0978; melting-point $19.35^{\circ}C$; boiling-point $243.5^{\circ}C$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: Aniline is diazotized and then reduced, producing the hydrochloride, which is decomposed by caustic soda and dissolved in ether. The ethereal solution is dried and the ether evaporated.

Method of purification: Vacuum distillation.

Grades: Commercial; C. P.; reagent.

Containers: Glass bottles; tins.

Uses: Reagent in analytical chemistry, for detecting aldehydes, sugars, etc.; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylhydrazine Hydrochloride*

$C_6H_5NHNH_2.HCl$.

Color and properties: Colorless, crystalline scales; sublimable, if cautiously heated.

Soluble in water, alcohol and ether.

Derivation: Treatment of phenylhydrazine with hydrochloric acid.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry for differentiation of sugars; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylhydroxyacetic Acid. See Acid amygdalic.

Phenylic Acid. See Phenol.

Phenylis Salicylas, U. S. P. See Salol

Phenylisothiocyanate. See Phenylmustard oil.

Phenylmethane. See Toluol.

Phenylmustard Oil* (Thiocarbanil; Phenylisothiocyanate; Phenylthiocarbonylimide) C_6H_5NCS .

Color and properties: A pale yellow liquid; penetrating irritating odor; readily volatilized with steam.

Constants: Specific gravity 1.1382; melting-point $-21^{\circ}C$; boiling-point $221^{\circ}C$. Soluble in alcohol and ether; insoluble in water.

Derivation: (a) By action of concentrated hydrochloric acid on sulfocarbonylimide; (b) By reaction of thiophosgene with aniline.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Phenylnaphthylamine* (a) Phenyl- α -naphthylamine; (b) Phenyl- β -naphthylamine. $C_{10}H_7.NH.C_6H_5$.

Color and properties: (a) Crystalline

Constants: Specific gravity 1.71163; melting-point 1.25°C .; boiling-point 107.2°C .

Decomposed by water and alcohol.

Derivation: By distilling phosphorus pentoxide with phosphorus pentachloride.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: White label.

Phosphorus Pentachloride* (Phosphoric chloride; Phosphoric perchloride) PCl_5 .

Color and properties: Slightly yellow, crystalline mass; irritating odor; fuming in moist air; strong irritating effect on the eyes.

Constants: Specific gravity 3.60; melting-point: (Under pressure) 148°C . Ordinarily sublimates without melting; boiling-point $160^{\circ}\text{--}165^{\circ}\text{C}$.

Soluble in carbon bisulfide; decomposed by water.

Derivation: By action of chlorine on phosphorus or phosphorus trichloride.

Grades: Technical.

Containers: Iron barrels; glass bottles.

Uses: Chlorinating agent in organic chemistry.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Phosphorus Pentoxide* (Phosphoric anhydride) P_2O_5 .

Color and properties: Soft, white powder; deliquesces in air.

Constants: Specific gravity 2.387; melting-point 800°C .; boiling-point: Sublimes at red-heat.

Soluble in water and concentrated sulfuric acid.

Derivation: By burning yellow phosphorus in a current of dry air, usually in iron cylinders.

Method of purification: By sublimation in a current of oxygen in presence of red-hot platinum sponge.

Grades: Technical.

Containers: Iron drums; tightly stoppered glass bottles.

Uses: Dehydrating agent; sugar refining.

Fire hazard: None.

Railroad shipping regulations: None.

Phosphorus Sesquisulfide* (Tetraphosphorus trisulfide) P_4S_8 .

Color and properties: Yellow, crystalline mass; very inflammable.

Constants: Specific gravity 2.00; melting-point 172°C .; boiling-point 407.8°C .

Soluble in carbon bisulfide; insoluble in cold water; decomposed by hot water.

Derivation: By gently heating phosphorus and sulfur.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Phosphorus Trichloride* (Phosphorus chloride) PCl_3 .

Color and properties: Clear, colorless fuming liquid; decomposes rapidly in moist air.

Constants: Specific gravity 1.6128; melting-point -111.8°C .; boiling-point 76°C .

Soluble in ether, benzol, carbon bisulfide and carbon tetrachloride; decomposed by water.

Derivation: By passing a current of dry chlorine over gently heated phosphorus which ignites. The trichloride, admixed with some pentachloride, distills over. A small amount of phosphorus is added and the whole distilled.

Grades: Technical.

Containers: Iron drums.

Uses: Chlorinating agent; solvent for phosphorus.

Fire hazard: Dangerous.

Railroad shipping regulations: White label.

Phosphoryl Chloride. See Phosphorus oxychloride.

Phosphotungstic Acid. See Acid phosphotungstic.

Phosphowolframic Acid. See Acid phosphotungstic.

Photal. Proprietary name for a photographic developer.

Photophor. See Calcium phosphide.

Phthalic Acid. See Acid phthalic.

Phthalic Anhydride* (Acid phthalic anhydride) $C_6H_4(CO)_2O$.

Color and properties. White, crystalline needles; sublimes below boiling-point; characteristic odor.

Constants: Specific gravity 1.527; melting-point $128^{\circ}C$; boiling-point $284.5^{\circ}C$.

Soluble in alcohol; slightly soluble in ether and hot water.

Derivation: By the distillation of phthalic acid.

Method of purification: Sublimation.

Grades: Technical; pure.

Containers: Wooden barrels.

Uses: Manufacture of phenolphthalein and other phthaleins, eosin dyestuffs, phthalimide and anthranilic acid; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Phthalimide, Ortho-* $C_6H_4(CO)_2NH$.

Color and properties: White, crystalline leaflets.

Constants: Melting-point $233.5^{\circ}C$; boiling-point: Sublimes.

Slightly soluble in ether; insoluble in benzol.

Derivation: By dissolving phthalic anhydride in ammonium hydroxide, evaporating to dryness and fusing the residue.

Method of purification: Sublimation.

Grades: Technical.

Containers: Barrels; tins.

Uses: Production of indigo, via anthranilic acid; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Physostigma (Calabar bean; Ordeal bean; Chop nut; Split nut).

Derivation: Seed of *Physostigma venenosum*.

Habitat: West Africa.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine; source of physostigmine.

Fire hazard: None.

Railroad shipping regulations: None.

Physostigminæ Salicylas, U. S. P. Physostigmine salicylate.

Physostigminæ Sulfas, U. S. P., B. P. Physostigmine sulfate.

Phytolacca* (Poke root; Garget).

Derivation: Dried root of *Phytolacca decandra* Phytolaccaceæ.

Habitat: North America; Southern Europe.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Pichi.

Derivation: Leaves, branches and wood of *Fabiana imbricata*.

Habitat: Chili and Peru.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Pickling Acid. See Acid, Pickling.

Picramic Acid. See Acid picramic.

Picraminic Acid. See Acid picramic

Picric Acid. See Acid picric.

Picronitric Acid. See Acid picric.

Pig-wrack. See Chondrus.

Pill-bearing Spurge. See *Euphorbia pilulifera*.

Pilocarpine* $C_{11}H_{16}N_2O_2$.

Color and properties: Colorless or yellow, hygroscopic, needle-like crystals; very poisonous.

Constants: Melting-point $34^{\circ}C$.

Soluble in water, alcohol and chloroform; slightly soluble in ether.

Derivation: Alkaloid from the leaves of

Pilocarpus jaborandi or **Pilocarpus microphyllus**.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine; hair pomades and tonics. Usually used in the form of the hydrochloride, nitrate or other salt.

Fire hazard: None.

Railroad shipping regulations: None.

Pilocarpinæ Hydrochloridum, U. S. P.

See Pilocarpine.

Pilocarpinæ Nitras, U. S. P., B. P. See

Pilocarpine.

Pilocarpus. See page 507.

Pimenta. See page 507.

Pimenta Oil.

Color and properties: Colorless or pale yellow liquid; aromatic, clove-like odor; pungent and spicy taste; becomes darker and thicker with age and exposure.

Constants: Specific gravity 1.045-1.055.

Soluble in alcohol, ether and chloroform.

Derivation: Distilled from the nearly ripe fruit of *Pimenta officinalis*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Pimento. See Pimenta, page 507.

Pinchbeck.* An alloy of copper and zinc, containing more zinc than in brass, resembling gold in appearance.

Pine Oil* (Pine-needle oil, Fir-wood oil).

Color and properties: Bright yellow, volatile, thin liquid oil; aromatic odor and taste.

Chief known constituents: Pinene, sylvestrene, limonene and bornyl acetate.

Constants: Specific gravity 0.853-0.905; boiling-point 150°-185°C.

Soluble in alcohol, ether, chloroform and turpentine.

Derivation: Distilled from the leaves of various conifers.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Perfumery; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Pine Oil, Siberian (*Oleum abietis*, Siberian fir oil).

Color and properties: Colorless or pale yellow liquid; aromatic odor; pungent taste.

Constants: Specific gravity 0.900-0.920; optical rotation -32 to -42; refractive index 1.474.

Soluble in chloroform, ether, carbon bisulfide and turpentine.

Derivation: Distilled from the fresh leaves of *Abies sibirica*.

Method of purification: Rectification.

Grades: Technical; B. P.

Containers: Iron drums; glass bottles.

Uses: Medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Pine Resin. See Colophony.

Pine-tar Oil.*

Color and properties: Almost colorless, mobile liquid; strong tarry odor and taste; becomes dark reddish-brown on standing. Is a complex mixture of hydrocarbons, acetic and other organic acids and of other constituents of pine-tar.

Constants: Specific gravity 0.970.

Soluble in ether, chloroform and turpentine.

Derivation: Distillation of pine tar.

Method of purification: Rectification.

Grades: Technical.

Containers: Tank cars; wooden barrels.

Uses: Ore concentration by flotation; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Pinene* [Australene; Laurene; "Menthene" (Not the same as the menthene from menthol by dehydration, which is $C_{10}H_{18}$); Terebenthene] $C_{10}H_{16}$.

Color and properties: Colorless, transparent liquid, the chief constituent of oil of turpentine and present in many essential oils.

Constants: Specific gravity 0.8587; boiling-point 156°C . Ordinary pinene (alpha-pinene) is usually accompanied by its isomer, beta-pinene, boiling-point 163°C .

Soluble in alcohol, ether and chloroform; very slightly soluble in water. **Derivation:** From oil of turpentine by fractionation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Manufacture of artificial camphor, terpin hydrate, and terpineol.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Pinene Hydrochloride. See Terpene hydrochloride.

Pine Tulip. See Chimaphila.

Pink, Carolina. See Spigelia.

Pink Salt. See Stannic chloride.

Pink, True. See Spigelia.

Piper (Pepper; Black Pepper).

Derivation: Dried unripe fruit of *Piper nigrum*.

Habitat: India, Malabar coast, Philippines, Sumatra, Java, Ceylon and Borneo.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Condiment; medicine; pepper oil.

Fire hazard: None.

Railroad shipping regulations: None.

Piperazidine. See Piperazine.

Piperazine* (Diethylenediamine; Pyrazine hexahydride; Piperazidine; Ethyleneimine) $\text{NH}(\text{CH}_2)_2(\text{CH}_2)_2\text{NH}$.

Color and properties: Colorless, deliquescent, transparent, needle-like crystals, which absorb carbon dioxide from the air. Keep well stoppered.

Constants: Melting-point $104\text{--}107^{\circ}\text{C}$; boiling-point 145°C .

Soluble in water.

Derivation: Treatment of ethylene

bromide or chloride with alcoholic ammonia at 100°C .

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Piperonal. See Heliotropin.

Piperonyl Aldehyde. See Heliotropin.

Pipsissewa. See Chimaphila.

Pisanite. An iron sulfate containing copper found in Montana $(\text{FeCu})\text{SO}_4 \cdot 7\text{H}_2\text{O}$.

Pissaspalt. See Maltha.

Pitayin. See Quinidine.

Pitchblende. See Uraninite.

Pitch, Burgundy* (Burgundy resin).

Color and properties: Yellowish-brown, opaque or translucent, brittle resinous lumps; aromatic odor; sweetish taste.

Chief known constituents: A volatile oil, abietic acid, pimaric acid.

Soluble in glacial acetic acid and hot alcohol.

Derivation: Resinous exudations of *Abies excelsa* and other coniferæ.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Pitch, Candle. See Stearin pitch, page 509.

Pitch, Coal-tar.*

Color and properties: A dark-brown to black, amorphous body, varying in consistency from soft and sticky to hard and brittle, according to the degree to which distillation has been carried out.

Derivation: Coal-tar pitch is the residue remaining after coal-tar has been distilled to recover the light, medium

and heavy oils, or refined coal-tar.
Grades: Technical.
Containers: Wooden barrels.
Uses: Waterproofing; roofing; paving compounds and fillers; insulation; fuel-briquetting; paints; core-compounds; electrodes; pitch-coke; fuel.
Fire hazard: Dangerous.
Railroad shipping regulations: None

Pitch, Stearin. See Stearin pitch, page 509.

Pix Carbonis Præparata, B. P. Prepared coal-tar.

Pix Liquida, U. S. P., B. P. See Coal-tar.

Plaster of Paris. See Calcium sulfate.

Plastic Clay. See Clay.

Platinic Chloride. See Platinum chloride.

Platinous Chloride. See Platinum bichloride.

Platinum Pt.

Color and properties: Dull, silvery, malleable, ductile metal; unaffected by moist air or ordinary reagents; somewhat softer than silver. Found in nature alloyed with iridium, rhodium, palladium, and sometimes with iron and gold. Ural region of Russia, Colombia, Borneo, Alaska, California, Oregon, New South Wales, Tasmania, Nevada, Washington.

Constants: Specific gravity 21.16; melting-point 1753°C .

Soluble in aqua regia and fused alkali; insoluble in water and ordinary acids and alkalis.

Derivation: By solution of metalliferous sands in aqua regia, precipitation of the insoluble ammonium chloroplatinate, conversion of latter by ignition into platinum sponge, which is converted into the massive metal by melting in the oxy-hydrogen flame.

Method of purification: Repetition of the above process.

Impurities: Iridium; iron.

Grades: Technical.

Containers: Wooden boxes.

Uses: Manufacture of platinum black; platinum sponge; platinum salts; apparatus, vessels, tubes, wire, etc., for chemical, industrial and scientific uses; catalyst; jewelry; lead-in wires for incandescent electric bulbs; dentistry; points for spark-plugs for internal-combustion engines.

Fire hazard: None.

Railroad shipping regulations: None.

Platinum-Ammonium Chloride* (Ammonium chloroplatinate)

$\text{PtCl}_2 \cdot 2\text{NH}_4\text{Cl}$

Color and properties: Dark ruby-red crystals.

Constants: Melting-point: Decomposes. Soluble in water.

Derivation: By the addition of ammonium hydroxide to chloroplatinic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Photography.

Fire hazard: None.

Railroad shipping regulations: None.

Platinum Bichloride* (Platinous chloride) PtCl_2 .

Color and properties: Greenish-grey powder which forms double salts with the chlorides of the alkali metals.

Constants: Specific gravity 5.87; melting-point: Is decomposed at red-heat yielding platinum.

Soluble in hydrochloric acid and ammonium hydroxide; insoluble in water.

Derivation: (a) By heating platinum sponge in presence of dry chlorine; (b) By heating chloroplatinic acid to 200°C .

Grades: Technical.

Containers: Glass bottles.

Uses: Platinum salts.

Fire hazard: None.

Railroad shipping regulations: None.

Platinum Black* (Platinum inohr).

Color and properties: Black powder; exhibits a metallic luster when rubbed.

Constants: Specific gravity 15.8-17.6.
Soluble in aqua regia.
Derivation: Reduction of solution of a platinum salt with zinc or magnesium.
Grades: Technical.
Containers: Glass bottles.
Uses: Catalyst; oxidizing agent in organic chemistry; absorbent of gases (hydrogen, oxygen, etc.) which it again liberates at red-heat; gas ignition apparatus.
Fire hazard: None.
Railroad shipping regulations: None.

Platinum Chloride* (Platinum tetrachloride; Platinic chloride) (a) PtCl_4 ; (b) $\text{PtCl}_4 \cdot 5\text{H}_2\text{O}$.
Color and properties: (a) Brown solid; (b) Red crystals.

| | | |
|------------------|------------|---|
| Constants: | (a) | (b) |
| Specific gravity | ..... | 2.43 |
| Melting-point | Decomposes | Loses $4\text{H}_2\text{O}$ at 100°C |

Soluble in alcohol and water.
Derivation: By solution of platinum in aqua regia and evaporation.
Method of purification: Crystallization.
Grades: Technical.
Containers: Glass bottles.
Uses: Chemical reagent.
Fire hazard: None.
Railroad shipping regulations: None.
Note: The platinum chloride of commerce is usually chloroplatinic acid.

Platinum Dichloride. See Platinum bichloride.

Platinum Sponge* Pt.
Color and properties: A grayish-black, porous mass.
Soluble in aqua regia.
Derivation: By the ignition of platinum-ammonium chloride.
Grades: Technical.
Containers: Glass bottles.
Uses: Catalyst; ignition of hydrogen in Doebereiner lamps, illuminating gas, etc.
Fire hazard: None.
Railroad shipping regulations: None.

Platinum Tetrachloride. See Platinum chloride.

Plessey's Green. See Chromic phosphate.

Plumbago. See Graphite.

Plumbojarosite. A natural hydrous sulfate of lead and iron found in New Mexico and Utah, $\text{PbFe}_3(\text{OH})_{12}(\text{SO}_4)_4$.

Plumbi Acetas, U. S. P., B. P. See Lead acetate.

Plumbi Iodidum, B. P. See Lead iodide.

Plumbi Oxidum, U. S. P., B. P. See Lead oxide, Brown.

Plumbic Acid, Anhydrous. See Lead oxide, Brown.

Plumbo-plumbic Oxide. See Lead oxide, Red.

Plumbus Oxide. See Lead oxide, Yellow.

Plumbus Sulfide. See Lead sulfide.

Plumbum. The Latin name for lead, hence the symbol Pb in chemical nomenclature and the names Plumbic and Plumbous, as: Plumbic sulfite and Plumbous oxide, etc.

Podophylli Indici Resina, B. P. See Podophyllin.

Podophylli Indici Rhizoma, B. P. See Podophyllum.

Podophylli Resina, B. P. See Podophyllin.

Podophylli Rhizoma, B. P. See Podophyllum.

Podophyllin* (Resin podophyllum).
Color and properties: Light-yellow powder or small yellow, bulky, fragile lumps; bitter acrid taste; the dust is

- very irritating to the eyes and the mucous membranes.
Chief known constituents: Podophyllo-toxin, picropodophyllin, etc.
Soluble in alcohol, ether, ammonium hydroxide, chloroform, potassium hydroxide solution and sodium hydroxide solution.
Derivation: Extraction of the rhizome or roots of *Podophyllum peltatum* with alcohol.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.
- Podophyllum*** (May-apple; Mandrake; Devil's apple; Indian apple; Vegetable calomel).
Derivation: Dried rhizome of *Podophyllum peltatum*.
Habitat: North America.
Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.
- Pogy Oil.** See Menhaden oil.
- Poison Hemlock.** See Conium.
- Poison Ivy.** See *Rhus toxicodendron*.
- Poison Nut.** See *Nux vomica*.
- Poison Oak.** See *Rhus toxicodendron*.
- Poison Parsley.** See Conium.
- Poison Tobacco.** See *Hyoscyamus*.
- Poison Vine.** See *Rhus toxicodendron*.
- Poke Root.** See *Phytolacca*.
- Polishing Acids.** See Acid, Polishing.
- Polishing Crocus.** See Ferric oxide, Red.
- Pollantin.** An antitoxin for hay-fever, prepared from the pollen of golden-rod and other plants.
- Pollucite.** A complex silicate containing caesium, occurring in pegmatite in Maine, $H_2O(CsNa)_2O.Al_2O_3.5SiO_2$.
- Polybasite.** A natural sulfide of silver and antimony, Ag_3SbS_8 , often also containing copper and arsenic. Found in Arizona, Colorado, Idaho, Montana and Nevada.
- Polycrase.** A complex mineral occurring in North Carolina, South Carolina and Texas, containing cerium, columbium, erbium, iron, titanium, uranium and yttrium.
- Polymerized Oil.** See Blown oil.
- Pomegranate.** See *Granatum*.
- Poppy Flowers.** See Papaver.
- Poppy Oil*** (Poppy-seed oil).
Color and properties: Very pale golden yellow, odorless liquid; pleasant taste.
Constants: Specific gravity 0.924-0.928; saponification value 189-196; iodine value 153-157; refractive index 1.4751-1.4773.
Soluble in ether, chloroform petroleum ether, and carbon bisulfide.
Derivation: By expressing the seed of the poppy, *Papaver somniferum*, *Papaver album* and *Papaver nigrum*.
Method of purification: Filtration.
Grades: Crude; red; white.
Containers: Barrels.
Uses: Food oil; artist's colors; adulterant for olive oil; soap-stock.
Fire hazard: None.
Railroad shipping regulations: None.
- Poppy-seed Oil.** See Poppy oil.
- Porcelain Clay.** See Kaolin.
- Porpoise-blubber Oil.** See Porpoise oil, Body.
- Porpoise Oil, Body*** (Dolphin oil, Porpoise-blubber oil).
Color and properties: Pale yellow liquid.
Constants: Specific gravity 0.9273; sa-

ponification value 216; iodine value 103; refractive index 1.4688.

Soluble in ether, chloroform, benzine and carbon bisulfide.

Derivation: By boiling the body-blubber of the brown porpoise.

Method of purification: Filtration.

Grades: Technical.

Containers: Wooden barrels.

Uses: Lubricant; soap-stock; leather dressing; illumination.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Porpoise Oil, Jaw.*

Color and properties: Pale yellow liquid.

Constants: Specific gravity 0.9292; iodine value 27.4; refractive index 1.4494.

Soluble in ether, chloroform, benzine and carbon bisulfide.

Derivation: By boiling the jaw-blubber of the brown porpoise.

Method of purification: Filtration.

Grades: Technical.

Containers: Wooden barrels.

Uses: Lubricant for watches, chronometers, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Porpoise Oil, Junk.*

Color and properties: Pale yellow liquid.

Constants: Specific gravity 0.9260; iodine value 22.4; refractive index 1.4485.

Soluble in ether, chloroform, benzine and carbon bisulfide.

Derivation: By boiling the face-blubber of the brown porpoise.

Grades: Technical.

Containers: Wooden barrels.

Uses: Lubricant; leather dressing.

Fire hazard: None.

Railroad shipping regulations: None.

Porous Alum. See Sodium-aluminum sulfate.

Potash. See Potassium carbonate.

Potash, Caustic. See Potassium hydroxide.

Potassa. See Potassium hydroxide.

Potassa Caustica, B. P. Potassium hydroxide.

Potassa Sulfurata, U. S. P., B. P. See Potassium sulfide.

Potassii Acetas, U. S. P., B. P. See Potassium acetate.

Potassii Bicarbonas, U. S. P., B. P. See Potassium bicarbonate.

Potassii Bichromas, B. P. See Potassium bichromate.

Potassii Bitartras, U. S. P., B. P. Potassium bitartrate.

Potassii Bromidum, U. S. P., B. P. See Potassium bromide.

Potassii Carbonas, U. S. P., B. P. See Potassium carbonate.

Potassii Chloras, U. S. P., B. P. See Potassium chlorate.

Potassii Citras, U. S. P., B. P. See Potassium citrate.

Potassii Citras Effervescens, U. S. P. Potassium citrate, Effervescent.

Potassii et Sodii Tartras, U. S. P. See Potassium-sodium tartrate.

Potassii Hydroxidum, U. S. P., B. P. See Potassium hydroxide.

Potassii Hypophosphis, U. S. P., Potassium hypophosphite.

Potassii Iodidum, U. S. P., B. P. See Potassium iodide.

Potassii Nitras, U. S. P., B. P. See Potassium nitrate.

Potassii Permanganas, U. S. P., B. P. See Potassium permanganate.

Potassii Sulfas, B. P. See Potassium sulfate.

Potassii Tartras, B. P. Potassium tartrate.

Potassii •Tartras Acidus, B. P. See Potassium bitartrate.

Potassium* (Kalium) K.

Color and properties: Soft, wax-like, silvery metal; rapidly oxidizing in moist air; must be kept submerged in kerosene, ether or the like.

Constants: Specific gravity 0.8621; melting-point 63.5°C .; boiling-point 757.5°C .

Soluble in alcohol, mercury and acids; insoluble in ether and kerosene; decomposes water into its constituents hydrogen and oxygen, generating sufficient heat to ignite the hydrogen.

Derivation: (a) By heating with potassium carbonate, wood charcoal and gypsum.

(b) By electrolysis of potassium chloride or a mixture of potassium hydroxide and sulfide, using a cathode of molten lead

Method of purification: Distillation and squeezing through a fine-meshed cloth.

Grades: Technical.

Containers: Glass bottles.

Uses: In chemical laboratories only, for experimental work, effecting condensations, etc.

Fire hazard. Dangerous.

Railroad shipping regulations: Yellow label.

Potassium Acetate* $\text{KC}_2\text{H}_3\text{O}_2$.

Color and properties: White, crystalline hygroscopic powder; saline taste. Keep well stoppered.

Constants: Melting-point 292°C .

Soluble in water and in alcohol; insoluble in ether.

Derivation: By the action of acetic acid on potassium carbonate.

Impurities: Chlorides; sulfates; heavy metals.

Grades: Pure; pure fused; U. S. P.; B. P.; reagent.

Containers: Glass bottles; wooden kegs

Uses: Dehydrating agent; reagent in analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Acid Carbonate. See Potassium bicarbonate.

Potassium Acid Oxalate. See Potassium binoxalate.

Potassium Acid Sulfate. See Potassium bisulfate.

Potassium Acid Sulfite. See Potassium bisulfite.

Potassium Acid Tartrate. See Potassium bitartrate.

Potassium-Aluminum Sulfate. See Aluminum-potassium sulfate.

Potassium-Antimony Tartrate. See Antimony-potassium tartrate.

Potassium Aurichloride. See Gold-potassium chloride.

Potassium Bicarbonate* (Potassium acid carbonate; known as baking soda in some countries) KHCO_3 .

Color and properties. Colorless, odorless, transparent crystals or white powder; slightly alkaline, salty taste.

Constants: Specific gravity 2.17; melting-point: Decomposes between 100° and 120°C .

Soluble in water and potassium carbonate solution; insoluble in alcohol.

Derivation: By passing carbon dioxide into a solution of potassium carbonate in water.

Grades: Commercial; highest purity; U. S. P.; B. P.; reagent.

Containers: Wooden barrels; tins; glass bottles.

Uses: In baking instead of yeast or baking powder; medicine; manufacture of pure potassium carbonate.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Bichromate* (Potassium dichromate; Red potassium chromate) $\text{K}_2\text{Cr}_2\text{O}_7$.

Color and properties: Bright, yellowish-red, transparent crystals; bitter, metallic taste; poisonous.

Constants: Specific gravity 2.692; melting-point 396°C .; boiling-point: Decomposes at 500°C .

Soluble in water; insoluble in alcohol.

Derivation: By heating an aqueous solution of sodium bichromate with potassium chloride, concentrating the solution, whereupon sodium chloride is deposited in the vessel. Lead rods are suspended in the solution and the bichromate crystallizes on these.

Method of purification: Recrystallization.

Grades: Commercial; highest purity; highest purity fused; B. P.; reagent.

Containers: Wooden barrels, glass bottles.

Uses: Medicine; histology; tanning; bleaching; electrotechnology; dyeing; photography; manufacturing fireworks; oxidizing agent.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Potassium Binoxalate* (Potassium acid oxalate; Acid potassium oxalate; Sal acetosella; Salt of sorrel; Essential salt of lemon) $\text{KHC}_2\text{O}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$.

Color and properties: White crystals; bitter, sharp taste; somewhat hygroscopic; poisonous.

Constants: Specific gravity of the anhydrous salt 2.088; melting-point: Decomposes when heated.

Soluble in water.

Derivation: The neutral potassium oxalate and oxalic acid are dissolved in water and crystallized.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Removing ink stains; scouring metals; cleaning wood; photography.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Biphosphate. See Potassium phosphate, Monobasic.

Potassium Bisulfate* (Potassium acid sulfate) KHSO_4 .

Color and properties: Colorless crystals; the fused salt is deliquescent.

Constants: Specific gravity 2.245; melting-point 200°C .; boiling-point: Decomposes.

Soluble in water, yielding a solution with acid reaction; decomposes in alcohol.

Derivation: (a) By heating potassium sulfate with sulfuric acid; (b) By heating potassium chloride with sulfuric acid to a moderate heat.

Method of purification: Crystallization. **Impurities:** Heavy metals; chlorine; arsenic.

Grades: Commercial; reagent; fused; highest purity, medicinal.

Containers: Glass bottles; barrels.

Uses: Flux.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Bisulfite* (Potassium acid sulfite) KHSO_3 .

Color and properties: White, crystalline powder; sulfur dioxide odor.

Constants: Melting-point: Decomposes when heated.

Soluble in water; insoluble in alcohol. **Derivation:** Sulfur dioxide is passed through a solution of potassium carbonate until no more carbon dioxide is given off; the solution is concentrated and allowed to crystallize.

Method of purification: Recrystallization.

Impurities: Heavy metals; arsenic.

Grades: Commercial; reagent; highest purity, medicinal.

Containers: Wooden barrels.

Uses: Antiseptic; source of sulfurous acid particularly in brewing; analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Bitartrate* (Cream of tartar; Potassium acid tartrate) $\text{KHC}_4\text{H}_4\text{O}_6$.

Color and properties: White crystals.

Constants: Specific gravity 1.956.

Soluble in water; slightly soluble in alcohol.

Derivation: From argols by extraction with water and crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden kegs.

Uses: Medicine; baking powder.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Bromate* KBrO_3 .

Color and properties: White crystals or crystalline powder.

Constants: Specific gravity 3.27; melting-point 434°C .; boiling-point: Decomposes when heated above the melting-point.

Soluble in water; insoluble in alcohol.

Derivation: (a) By adding potassium sulfate to a solution of barium bromate; (b) By passing bromine into a solution of potassium hydroxide, potassium bromide and bromate being formed, which are separated by crystallization.

Method of purification: Recrystallization.

Impurities: Potassium bromide.

Grades: Pure; reagent.

Containers: Wooden kegs; glass bottles.

Uses: Reagent in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Bromide* KBr.

Color and properties: White, crystalline granules or powder; pungent, strong, bitter saline taste; somewhat hygroscopic.

Constants: Specific gravity 2.749; melting-point 730°C .; boiling-point 1435°C .

Soluble in water; slightly soluble in alcohol and ether.

Derivation: (a) Potassium hydroxide in hot solution is treated with bromine, the solution evaporated to dryness, the residue mixed with carbon and heated to redness; (b) Solutions of iron bromide and potassium carbonate are mixed and heated, the solution filtered and concentrated and the bromide crystallized out.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine; manufacture of effervescent headache remedies; photography.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Carbonate* (Potash, Pearl-ash, Salts of tartar) (a) K_2CO_3 ; (b) $2\text{K}_2\text{CO}_3 \cdot \text{H}_2\text{O}$; (c) $\text{K}_2\text{CO}_3 \cdot \text{H}_2\text{O}$.

Color and properties: White, deliquescent, granular powder; alkaline reaction.

Constants: (a) Specific gravity 2.3312; melting-point 900°C .; boiling-point: Volatile at white heat.

Soluble in water; insoluble in alcohol.

Derivation: (a) Lixiviation of wood and plant ashes with water, concentration of the solution and calcination of residue, which is extracted with water; (b) Aqueous residue of beet-sugar molasses after fermentation and distillation to remove alcohol is concentrated and treated as above; (c) Recovered from wool washing; (d) Recovered in an impure form, by electrical precipitation from the fumes of cement factories, metallurgical furnaces, etc.

Method of purification: Recrystallization.

Impurities: Sodium carbonate; potassium chloride; potassium sulfate.

Grades: Crystals; pure; reagent; highest purity; U. S. P.; B. P.

Containers: Wooden barrels.

Uses: Manufacture of soft soaps; glass manufacture; dyeing; medicine; wool washing.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Chlorate* (Potassium oxy-muriate) KClO_3 .

Color and properties: Transparent, colorless crystals or white powder; cooling, saline taste; poisonous; must not be ground with sugar, sulfur or other combustible substance, may cause explosions.

Constants: Specific gravity 2.337; melting-point 357°C .; boiling-point: Decomposes at about 400°C ., giving off oxygen.

Soluble in water and alkalis; very slightly soluble in alcohol.

Derivation: By electrolyzing a hot concentrated alkaline solution of potassium chloride.

Method of purification: Recrystallization.

Grades: Highest purity, medicinal; pure granulated; U. S. P., B. P.; commercial.

Containers: Wooden barrels.

Uses: Explosives; matches; source of oxygen; printing textile fabrics; pyrotechnics; percussion caps; medicine.

Fire hazard: Dangerous.
 Railroad shipping regulations: Yellow label.

Potassium Chloride* KCl .

Color and properties: Colorless or white crystals or powder; strong saline taste. Occurs in nature in the Stassfurt deposits in various minerals.

Constants: Specific gravity 1.987; melting-point 772°C .; boiling-point 1500°C .

Soluble in water and alkalis; slightly soluble in alcohol; insoluble in absolute alcohol.

Derivation: By fusion or extraction of carnallite, $\text{MgCl}_2 \cdot \text{KCl} \cdot 6\text{H}_2\text{O}$, with a solution of magnesium chloride.

Method of purification: Recrystallization.

Impurities: Heavy metals; alkaline earths.

Grades: Highest purity; reagent; commercial; crude.

Containers: Wooden barrels.

Uses: Fertilizer; potassium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Chloroplatinate* (Platinum-potassium chloride; Potassium platinum-chloride) K_2PtCl_6 .

Color and properties: Small, orange-yellow crystals or powder.

Constants: Melting-point: Decomposes when heated.

Insoluble in alcohol; very slightly soluble in water.

Derivation: By adding platinum chloride to a solution of a potassium salt and crystallizing.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Photography.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Chloroplatinite* K_2PtCl_4 .

Color and properties: Ruby-red crystals.

Constants: Specific gravity 3.291.

Soluble in water; insoluble in alcohol.

Derivation: By adding potassium car-

bonate to a solution of chloroplatinous acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Photography.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Chromate* K_2CrO_4 .

Color and properties: Yellow crystals.

Constants: Specific gravity 2.7319; melting-point 971°C .

Soluble in water; insoluble in alcohol.

Derivation: By adding potassium carbonate to a solution of potassium bichromate and crystallizing.

Method of purification: Recrystallization.

Impurities: Free alkali; sulfates; aluminum; alkaline earths.

Grades: Highest purity; reagent; commercial; crude.

Containers: Wooden kegs.

Uses: Reagent in analytical chemistry; dyeing; inks; medicine; leather finishing.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Citrate* $\text{K}_3\text{C}_6\text{H}_5\text{O}_7 \cdot \text{H}_2\text{O}$.

Color and properties: Colorless or white crystals or powder; cooling saline taste.

Constants: Specific gravity 1.98; melting-point: Decomposes when heated to about 230°C .

Soluble in alcohol and water.

Derivation: By the action of citric acid on potassium carbonate.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles; wooden kegs.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Cobaltinitrite. See Cobalt-potassium nitrite.

Potassium Cyanaurate. See Gold-potassium cyanide.

Potassium Cyanide* KCN .

Color and properties: White, amorph-

ous, deliquescent lumps or crystalline mass; faint odor of bitter almonds; extremely poisonous, do not handle with bare hands!

Constants: Specific gravity 1.52; melting-point: At red-heat; boiling-point: At red-heat.

Soluble in water, alcohol and glycerin.

Derivation: (a) Potassium carbonate and carbon are heated in a current of ammonia. The fused mass is extracted with alcohol, the latter distilled off and the cyanide fused. (b) Calcium cyanamid is prepared from calcium carbide and nitrogen and is fused with caustic potash. (c) From by-products of beet-sugar manufacture.

Grades: Commercial; pure; reagent.

Containers: Barrels; glass bottles.

Uses: Extraction of gold and silver from ores; electroplating; heat treatment of steel; reagent in analytical chemistry; insecticide.

Fire hazard: None.

• Railroad shipping regulations: None.

Potassium Diphosphate. See Potassium phosphate, Monobasic.

Potassium Ferricyanide* (Red prussiate of potash; Potassium prussiate, Red) $K_3Fe(CN)_6$.

Color and properties: Bright-red, lustrous crystals or powder; poisonous.

Constants: Specific gravity 1.8109; melting-point: Decomposes when heated. Soluble in water; slightly soluble in alcohol.

Derivation: Chlorine is passed into a solution of potassium ferrocyanide, the ferricyanide separating out.

Method of purification: Recrystallization.

Impurities: Ferrous salts; potassium chloride.

Grades: Pure crystals; pure powder; commercial; crude; highest purity reagent.

Containers: Barrels; glass bottles.

Uses: Calico printing; wool dyeing; tempering steel; mordant for wood; etching liquid; production of pigments.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Ferrocyanide* (Yellow prussiate of potash; Potassium prussiate, Yellow) $(K_4Fe(CN)_6 \cdot 3H_2O)$.

Color and properties: Lemon-yellow crystals or powder; mild saline taste; effloresces on exposure to air.

Constants: Melting-point: Loses its water of crystallization when heated to $60^\circ C$; boiling-point: Decomposes when heated to red heat.

Soluble in water; insoluble in alcohol.

Derivation: "Spent oxide" from illuminating gas manufacture is extracted with water to remove ammonia and soluble salts, the residue is dried and sulfur extracted with carbon bisulfide, what remains is mixed with lime, heated with steam in closed pans to recover ammonia, yielding a concentrated solution of calcium ferrocyanide. This is treated with a boiling solution of potassium chloride yielding the calcium-potassium ferrocyanide which is almost insoluble. This is treated with a solution of potassium carbonate, insoluble calcium carbonate being precipitated and a solution of the ferrocyanide remaining, which is filtered, concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Potassium carbonate, sulfate and chloride; calcium slats.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Medicine; potassium ferricyanide; pigments; reagent in analytical chemistry; tempering steel; dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Fluoride* (a) KF; (b) $KF_2 \cdot H_2O$.

Color and properties: White, crystalline, deliquescent powder; sharp saline taste.

Constants: Specific gravity: (a) 2.454.

Melting-point: (a) About $800^\circ C$; (b) $41^\circ C$.

Soluble in water and hydrofluoric acid; insoluble in alcohol

Derivation: By saturation of hydrofluoric acid with potassium carbonate.

Method of purification: Crystallization.

Impurities: Arsenic.

Grades: Technical; pure; purified, free of arsenic.

Containers: Wooden kegs; tins.

Uses: Etching glass; food preservative.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Glycerinophosphate. See Potassium glycerophosphate.

Potassium Glycerophosphate* (Potassium glycerinophosphate)

$C_8H_7O_8PO(OK)_2 \cdot (H_2O)_n$.

Color and properties: Pale yellow, sirupy liquid; acid taste.

Soluble in alcohol; miscible with water in all proportions.

Derivation: Glycerine and phosphorus pentoxide or meta-phosphoric acid are mixed, warmed and exactly neutralized with potassium carbonate, warmed and concentrated.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Hydrate. See Potassium hydroxide.

Potassium Hydrogen Phosphate. See Potassium phosphate, Dibasic.

Potassium Hydroxide* (Caustic potash, potassium hydrate; Potassa) KOH.

Color and properties: White, deliquescent pieces, lumps or sticks having a crystalline fracture. Keep well stoppered; absorbs water and carbon dioxide from the air.

Constants: Specific gravity 2.044; melting-point 360.4°C .; boiling-point: Sublimes when heated above melting-point.

Soluble in water and alcohol; slightly soluble in ether.

Derivation: (a) Potassium carbonate solution is treated with lime at a boiling temperature and water added to prevent reversal of the reaction.

The solution is filtered and evaporated to dryness.

Method of purification: Sulfur compounds are removed by the addition of potassium nitrate to the fused caustic. The purest form is obtained by solution in alcohol, filtration and evaporation.

Impurities: Alumina; silica; sulfuric acid.

Grades: Commercial; ground; flake; fused (88-92 per cent; purified by alcohol (sticks, lumps and drops); reagent, highest purity; U. S. P.; B. P.

Containers: Wooden barrels; glass bottles.

Uses: Soap manufacture; bleaching; manufacture of oxalic acid; manufacture of potassium compounds; reagent in analytical chemistry; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Potassium Iodide* Ki.

Color and properties: White crystals, granules or powder; strong bitter saline taste.

Constants: Specific gravity 3.123; melting-point 680°C .; boiling-point 1420°C . Soluble in water, alcohol and ether.

Derivation: A hot solution of potassium hydroxide is treated with iodine, evaporated to dryness, mixed with carbon and heated to redness.

Method of purification: Recrystallization.

Impurities: Potassium carbonate; metals; sulfuric acid; potassium bromide; potassium chloride.

Grades: Crystals; granulated; powder; highest purity; reagent; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine; reagent in analytical chemistry; photography.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Meta-bisulfite (Potassium pyrosulfite) $K_2S_2O_5$.

Color and properties: White, crystalline crusts.

Slightly soluble in water.

Derivation: By heating potassium bisulfite until it loses water.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Antiseptic; reagent in analytical chemistry; source of sulfurous acid.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Monophosphate. See Potassium phosphate, Dibasic.

Potassium Nitrate* (Niter, Nitre, Saltpeter) KNO_3 .

Color and properties: Transparent, colorless or white crystalline powder or crystals; cooling, pungent, saline taste.

Constants: Specific gravity 2.1062; melting-point 337°C .; boiling-point: Decomposes with deflagration at about 400°C .

Soluble in water; insoluble in alcohol and ether.

Derivation: (a) A solution of sodium nitrate and potassium chloride is evaporated until sodium chloride crystallizes out, then decanted and crystallized. (b) Soil, plant ashes and decomposing organic matter (manure) are built into a mound, moistened from time to time and finally extracted with water. (c) Also extracted from certain soils of India and Ceylon, where it occurs abundantly.

Method of purification: Recrystallization.

Grades: Commercial; pure, double refined (granulated, small crystals, medium crystals, large crystals, extra large crystals, powdered); pure, triple refined (granulated, powdered); U. S. P.; B. P.

Containers: Kegs; boxes.

Uses: Medicine; gunpowder; pyrotechnics; pickling meat; fertilizer; reagent in analytic chemistry; tobacco.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Potassium Ortho-phosphate. See Potassium phosphate.

Potassium Oxalate* $\text{K}_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$.

Color and properties: Colorless transparent crystals.

Constants: Specific gravity 2.08; melting-point: Decomposes when heated. Soluble in water.

Derivation: Potassium formate or carbonate mixed with a small quantity of oxalate and a slight excess of alkali is heated, the oxalate extracted with water and crystallized.

Method of purification: Recrystallization.

Impurities: Heavy metals; chlorine.

Grades: Technical.

Containers: Glass bottles; wooden kegs.

Uses: Medicine; reagent in analytical chemistry; source of oxalic acid.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Oxide* K_2O .

Color and properties: Gray, crystalline mass.

Constants: Specific gravity 2.32; melting-point: Red heat.

Soluble in water, alcohol and ether.

Derivation: By heating potassium nitrate and metallic potassium.

Grades: Technical.

Containers: Tins; iron barrels.

Uses: Potassium salts; dehydrating agent.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Potassium Oxymuriate. See Potassium chlorate.

Potassium Oxyquinoline Sulfonate. See Quinosol.

Potassium Permanganate* KMnO_4 .

Color and properties: Dark purple crystals having a blue metallic sheen; sweetish, astringent taste.

Constants: Specific gravity 2.7032; melting-point: Decomposes at 240°C .

Soluble in water, in sulfuric acid, acetic acid and alcohol.

Derivation: (a) Potassium hydroxide is dissolved in water, manganese dioxide and potassium chlorate added, the whole boiled, evaporated and the resi-

Derivation: By saturation of hydrofluoric acid with potassium carbonate.

Method of purification: Crystallization.

Impurities: Arsenic.

Grades: Technical; pure; purified, free of arsenic.

Containers: Wooden kegs; tins.

Uses: Etching glass; food preservative.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Glycerinophosphate. See Potassium glycerophosphate.

Potassium Glycerophosphate* (Potassium glycerinophosphate)

$C_8H_7O_8PO(OK)_2 \cdot (H_2O)_n$.

Color and properties: Pale yellow, sirupy liquid; acid taste.

Soluble in alcohol; miscible with water in all proportions.

Derivation: Glycerine and phosphorus pentoxide or meta-phosphoric acid are mixed, warmed and exactly neutralized with potassium carbonate, warmed and concentrated.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Hydrate. See Potassium hydroxide.

Potassium Hydrogen Phosphate. See Potassium phosphate, Dibasic.

Potassium Hydroxide* (Caustic potash, potassium hydrate; Potassa) KOH.

Color and properties: White, deliquescent pieces, lumps or sticks having a crystalline fracture. Keep well stoppered; absorbs water and carbon dioxide from the air.

Constants: Specific gravity 2.044; melting-point 360.4°C .; boiling-point: Sublimes when heated above melting-point.

Soluble in water and alcohol; slightly soluble in ether.

Derivation: (a) Potassium carbonate solution is treated with lime at a boiling temperature and water added to prevent reversal of the reaction.

The solution is filtered and evaporated to dryness.

Method of purification: Sulfur compounds are removed by the addition of potassium nitrate to the fused caustic. The purest form is obtained by solution in alcohol, filtration and evaporation.

Impurities: Alumina; silica; sulfuric acid.

Grades: Commercial; ground; flake; fused (88-92 per cent; purified by alcohol (sticks, lumps and drops); reagent, highest purity; U. S. P.; B. P.

Containers: Wooden barrels; glass bottles.

Uses: Soap manufacture; bleaching; manufacture of oxalic acid; manufacture of potassium compounds; reagent in analytical chemistry; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Potassium Iodide* Ki.

Color and properties: White crystals, granules or powder; strong bitter saline taste.

Constants: Specific gravity 3.123; melting-point 680°C .; boiling-point 1420°C . Soluble in water, alcohol and ether.

Derivation: A hot solution of potassium hydroxide is treated with iodine, evaporated to dryness, mixed with carbon and heated to redness.

Method of purification: Recrystallization.

Impurities: Potassium carbonate; metals; sulfuric acid; potassium bromide; potassium chloride.

Grades: Crystals; granulated; powder; highest purity; reagent; U. S. P.; B. P.

Containers: Glass bottles.

Uses: Medicine; reagent in analytical chemistry; photography.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Meta-bisulfite (Potassium pyrosulfite) $K_2S_2O_5$.

Color and properties: White, crystalline crusts.

Slightly soluble in water.

Soluble in water; insoluble in alcohol. Derivation: Potassium acid tartrate is dissolved in water, the solution saturated with sodium carbonate, concentrated after purification and crystallized.

Method of purification: Hydrogen sulfide passed into remove copper and iron, the solution heated with animal charcoal and filtered.

Impurities: Copper; iron.

Grades: Highest purity; reagent; commercial crystals or powder; U. S. P. Containers: Wooden barrels; glass bottles.

Uses: Medicine; baking powders.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Sulfate* (Arcanum duolicatum; Tartarus vitriolatus) K_2SO_4 .

Color and properties: Colorless or white, hard crystals or powder; bitter, saline taste.

Constants: Specific gravity 2.6633; melting-point $1072^{\circ}C$.

Soluble in water; insoluble in alcohol.

Derivation: (a) By treatment of potassium chloride with sulfuric acid. (b) By fractional crystallization of kainite.

Method of purification: Recrystallization.

Grades: Highest purity medicinal; reagent; commercial; crude; B. P.

Containers: Wooden kegs; glass bottles.

Uses: Reagent in analytical chemistry; medicine; fertilizer; alum manufacture; glass manufacture; raw material for potassium carbonate by the Leblanc process.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Sulfide* (Potassium sulfuret) K_2S .

Color and properties: Red, crystalline mass, deliquescent in air. Keep well stoppered.

Constants: Specific gravity 1.805.

Soluble in water, alcohol and glycerine; insoluble in ether.

Derivation: Potassium sulfate and carbon are heated in a tightly closed crucible to a moderate temperature.

Grades: Technical; U. S. P.; B. P.

Containers: Cans; glass bottles.

Uses: Reagent in analytical chemistry; depilatory; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Potassium Sulfocyanate* (Potassium rhodanide, Potassium thiocyanate, Potassium sulfocyanide) $KCNS$.

Color and properties: Colorless crystals.

Constants: Specific gravity 1.906; melting-point $172.3^{\circ}C$; boiling-point: Decomposes at $500^{\circ}C$.

Soluble in water, alcohol and acetone.

Derivation: By heating potassium cyanide with sulfur.

Method of purification: Crystallization.

Impurities: Heavy metals, sulfates.

Grades: Commercial; pure; purified; reagent.

Containers: Glass bottles; wooden kegs.

Uses: In freezing mixtures; manufacture of artificial mustard oil; reagent in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Potassium Sulfocyanide. See Potassium sulfocyanate.

Potassium Sulfuret. See Potassium sulfide.

Potassium Thiocyanate. See Potassium sulfocyanate.

Potassium-Titanium Oxalate. See page 507.

Potato Flour.*

Derivation: Flour prepared by drying and milling potatoes.

Grades: Technical.

Containers: Bags; wooden barrels.

Uses: Wheat flour substitute; manufacture of potato starch and dextrine.

Fire hazard: None.

Railroad shipping regulations: None.

Potato Spirit. See Amyl alcohol, Fermentation.

Potstone. See Talc.

Praseodymium* Pr.

Color and properties: One of the metallic elements of the rare earth group yielding green salts.

Constants: Specific gravity 6.4754; melting-point 940°C .

Decomposes water.

Derivation: From monazite sand in the form of salts, by extraction with acids.

Grades: Technical.

Containers: Boxes.

Uses: Praseodymium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Precipitated Calcium Phosphate. See Calcium phosphate, Tribasic.

Precipitated Chalk. See Calcium carbonate.

"Preparing Salt." See Sodium stannate.

Priceite. A boron mineral similar to colemanite.

Prickly Ash. See Xanthoxylum.

Primary Calcium Phosphate. See Calcium phosphate, Monobasic.

Primuline. A synthetic dyestuff used in dyeing yellow.

Prince's Pine. See Chimaphila.

Printer's Acetate. See Aluminum acetate.

Propanenitrile. See Ethyl cyanide.

Propenal. See Acrolein.

Propione. See Diethylketone.

Propionic Acid. See Acid propionic.

Propionic Aldehyde. See Propyl aldehyde.

Propionitrile. See Ethyl cyanide.

Propyl Alcohol* $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$.

Color and properties: Colorless liquid;

odor similar to ethyl alcohol.

Constants: Specific gravity 0.808; melting-point -127°C .; boiling-point 97°C .

Soluble in water, alcohol and ether.

Derivation: By fractional distillation of fusel oil.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Organic synthesis; propyl aldehyde.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Propyl Aldehyde* (Propionic aldehyde; Propylic aldehyde) $\text{CH}_3\text{CH}_2\text{CHO}$.

Color and properties: Colorless liquid; suffocating odor.

Constants: Specific gravity 0.807; boiling-point 48°C .

Soluble in water.

Derivation: From propyl alcohol by oxidation.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Propylacetic Acid. See Acid valeric, Normal.

Propyldioxybenzenemethylene Ester. See Safrole.

Propylenechlorohydrin, Alpha-. See Monochlorohydrin.

Propylformic Acid. See Acid butyric.

Propyl-meta-cresol, Para-. See Thymol.

Protargol.*

Color and properties: Yellow powder, being a protein compound of silver (8.3 per cent Ag).

Soluble in water and glycerine.

Grades: Pure.

Containers: Glass bottles.

Uses: Antiseptic; bactericide; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Protein.

Color and properties: Yellowish horny mass or powder, being the chief nitrogenous constituent of both animal and vegetable matter, there being over fifty known proteins, which are essentially polypeptides. All are colloids.

Very slightly soluble in water.

Derivation: By enzymatic hydrolysis (digestion) from animal (meat) and vegetable (grain) materials.

Grades: Technical; pure.

Containers: Kegs; tins.

Uses: Nutrient; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Proustite (Light ruby silver). A natural sulfide of silver and arsenic, $3\text{Ag}_2\text{S} \cdot \text{As}_2\text{S}_3$, containing 65 per cent of silver, and mined in Arizona, Colorado, Idaho, Montana, Nevada and New Mexico.

Pruni Virginianæ Cortex, B. P. See *Prunus virginiana*.

Prunus Virginiana* (Choke cherry; Wild cherry).

Derivation: Bark of *Prunus serotina*.

Habitat: North America.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Prussian Blue. See Ferric ferrocyanide.

Prussiate of Potash, Red. See Potassium ferricyanide.

Prussiate of Potash, Yellow. See Potassium ferrocyanide.

Prussiate of Soda, Red. See Sodium ferricyanide.

Prussiate of Soda, Yellow. See Sodium ferrocyanide.

Prussic Acid. See Acid hydrocyanic.

Pseudobutyl Alcohol. See Butyl alcohol, Tertiary.

Pseudocumidine. See Cumidine.

Pseudopropyl Alcohol. See Isopropyl alcohol.

Psilomelane. A common manganese ore, manganese hydrate, probably having the formula, H_2MnO_6 . Alabama, Arizona, Arkansas, California, Colorado, Georgia, Massachusetts, Montana, Nevada, New Mexico, North Carolina, South Carolina, Tennessee, Vermont and Virginia.

Psyllium. See page 507.

Pterocarpi Lignum, B. P. Red sanders wood.

Ptomaines. Derivatives of ethers of the polyhydric alcohols. All are exceedingly poisonous and are formed in putrefying proteins, dead bodies, decayed meat or fish. They have been prepared synthetically, viz.: Cadaverine is pentamethylenediamine. Muscarine is obtained by the oxidation of lecithin or hydroxyethyltrimethylammonium hydroxide. Putrescine is tetramethylenediamine. Neurine is trimethylvinylammonium hydroxide.

Ptyalin. See Enzymes, page 504.

Puccoon Root. See *Sanguinaria*.

Pudding Pipe. See *Cassia fistula*.

Pudding Stick. See *Cassia fistula*.

Pulsatilla* (Pasque flower; Wind flower; Meadow anemone; Easter flower).

Derivation: Herb of *Anemone pulsatilla*.

Habitat: Europe; Asia; U. S.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Pulvis Amygdalæ Compositus, B. P. Compound powder of almonds.

Pulvis Antimonialis, B. P. Antimonial powder.

Pulvis Aromaticus, U. S. P. Aromatic powder.

Pulvis Butæ Seminum, B. P. Powder of butea seeds.

Pulvis Catechu Compositus, B. P. Compound powder of catechu.

Pulvis Cinnamoni Compositus, B. P. Compound powder of cinnamon.

Pulvis Cretæ Aromaticus, B. P. Aromatic powder of chalk.

Pulvis Cretæ Aromaticus cum Opio, B. P. Aromatic powder of chalk with opium.

Pulvis Cretæ Compositus, U. S. P. Compound powder of chalk.

Pulvis Effervescens Compositus, U. S. P. Compound effervescing powder.

Pulvis Glycyrrhizæ Compositus, B. P. U. S. P. Compound powder of liquorice.

Pulvis Ipecacuanhæ Compositus, B. P. Compound powder of ipecacuanha.

Pulvis Ipecacuanhæ et Opii. Powder of ipecac and opium.

Pulvis Jalapæ Compositus, B. P., U. S. P. Compound powder of jalap.

Pulvis Kaladanæ Compositus, B. P. Compound powder of caladana.

Pulvis Kino Compositus, B. P. Compound powder of kino.

Pulvis Opii Compositus, B. P. Compound powder of opium.

Pulvis Rhei Compositus, B. P., U. S. P. Compound powder of rhubarb.

Pulvis Scammoniz Compositus, B. P. Compound powder of scammony.

Pulvis Sodæ Tartaratæ Effervescens, B. P. Effervescent sodium tartrate powder.

Pulvis Tragacanthæ Compositus, B. P. Compound powder of tragacanth.

Pumice.

Highly vesicular lava, i.e. a rock which has reached the surface of the earth

in a molten condition and varying in composition according to locality of origin.

Uses: Abrasive; base for depositing catalyzers; filling for acid towers; abrasive soaps and tooth powders.

Fire hazard: None.

Railroad shipping regulations: None.

Pumpkin Seed. See Pepo.

Purging Cassia. See Cassia fistula.

Purging Croton. See Tiglium, page 510.

Purple Boneset. See Eupatorium purpureum.

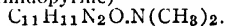
Purple Cone Flower. See Echinacea.

Purple of Cassius. See Gold chloride.

Purple Oxide. See Ferric oxide, Red.

Putty. A mixture of whiting (chalk) with 18 per cent of linseed oil, with or without white lead or other pigment.

Pyramidon* (Dimethylaminoantipyrine; Amidopyrine)



Color and properties: Colorless crystals.

Constants: Melting-point 106° to 107°C .

Soluble in water.

Derivation: By the reduction of isonitrosoantipyrine and methylating the product.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine, as such or as the camphorate or salicylate.

Fire hazard: None.

Railroad shipping regulations: None.

Pyrargyrite (Dark ruby silver). A compound sulfide of silver and antimony, $3\text{Ag}_2\text{S.Sb}_2\text{S}_3$, containing 60 per cent of silver, and mined in Arizona, California, Colorado, Idaho, Maine, Montana, Nevada, New Mexico, Oregon and Washington.

Pyrazine. See Antipyrine.

Pyrazine Hexahydride. See Piperazine.

Pyrazoline. See Antipyrine.

"Pyrene." A liquid fire-extinguisher consisting of carbon tetrachloride, etc.

Pyrethri Radix, B. P. See Pyrethrum.

Pyrethrum (Pellitory; Spanish pellitory; Spanish chamomile; Bertram; Longwort).

Derivation: Root of *Anacyclus pyrethrum compositæ*.

Habitat: North Africa.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Pyrethrum Flowers (Persian insect flowers; Persian pellitory).

Derivation: Flowers of *Pyrethrum roseum*.

Habitat: Persia and Western Asia.

Grades: Technical.

Containers: Bags.

Uses: Insecticide.

Fire hazard: None.

Railroad shipping regulations: None.

Pyridine* $\text{CH}(\text{CH}_3)_2\text{N}$.

Color and properties. Slightly yellow or colorless liquid; sharp penetrating empyreumatic odor; burning taste; slightly alkaline in reaction.

Constants: Specific gravity 0.9746; melting-point -42.0°C .; boiling-point 115.5°C .

Soluble in water, alcohol, ether, benzol, benzol, benzine, and fatty oils.

Derivation: Distillation of organic compounds containing nitrogen, gas liquor or light coal-tar oil.

Method of purification: Fractional distillation.

Grades: Technical.

Containers: Iron drums.

Uses: Denaturant for alcohol; solvent for anhydrous metallic salts; solvent in rubber, paint and other industries; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Pyrite. See Iron pyrites.

Pyrite, White. See Marcasite.

Pyrites, Copper. See Copper sulfide.

Pyrites, Iron. See Iron pyrites.

Pyrites, Magnetic. See Pyrrhotite.

"Pyro" Alcohol. See Methyl alcohol.

Pyrocatechin* (Ortho-dioxybenzene; Pyrocatechinic acid; Oxyphenic acid; Pyrocatechol; Catechol)
 $\text{C}_6\text{H}_4(\text{OH})_2$.

Color and properties: Colorless crystals.

Constants: Specific gravity 1.371; melting-point 104°C .; boiling-point 245°C .

Soluble in water, alcohol, ether, benzol and chloroform.

Derivation: By fusion of ortho-phenol-sulfonic acid with caustic potash.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Antiseptic; photography.

Fire hazard: None.

Railroad shipping regulations: None.

Pyrocatechinmonomethyl Ester. See Guaiacol.

Pyrocatechinic Acid. See Pyrocatechin.

Pyrocatechol. See Pyrocatechin.

Pyrocotton.* A nitrated cellulose not as fully nitrated as gun-cotton, containing 125 per cent nitrogen, used in the manufacture of smokeless powder, photographic films, airplane dope, celluloid and lacquers.

Pyrogallic Acid. See Acid pyrogallic.

Pyrogallol. See Acid pyrogallic.

Pyrola. See Chimaphila.

Pyroligneous Acid. See Acid pyroligneous.

Pyrolusite (Black manganese oxide; Manganese dioxide), MnO_2 . One of the main sources of manganese (63 per cent Mn) occurring in many states, Canada, Brazil, India, etc.

Pyromorphite (Green lead ore). Natural lead chlorophosphate, $3Pb_3P_2O_8.PbCl_2$, from Arizona, Colorado, Connecticut, Georgia, Idaho, Montana, Nevada and South Carolina.

Pyromucic Acid. See Acid pyromucic.

Pyromucic Aldehyde. See Furfural.

Pyrope. One of the garnets, $3MgO.Al_2O_3.3SiO_2$, used as an abrasive, and when transparent as a gem. Is deep red to nearly black in color, and is found in Arizona.

Pyrophyllite (Pencil stone). Natural hydrous aluminum silicate, $H_2O.Al_2O_3.4SiO_2$, resembles talc in structure, color, luster and feel. It is used for the manufacture of slate pencils and the talc or "talcum" of commerce. Quarried in California and North Carolina.

Pyrotartaric Acid. See Acid pyrotartaric.

Pyrotartaric Acid, Normal. See Acid glutaric.

Pyrovanadic Acid. See Acid vanadic.

Pyroxylin. See Nitrocellulose.

Pyroxylinum, U. S. P., B. P. See Nitrocellulose.

Pyrrhotite (Magnetic pyrites). Natural iron⁸ sulfide varying in composition. Some varieties contain nickel and are mined for their nickel value. It is one of the valuable and plentiful iron ores found in many of the states and in Canada.

Pyrrole* $(CH_2CH)_2NH$.

Color and properties: Yellowish, liquid oil; burning, pungent taste; readily polymerizes by the action of light and turns brown.

Constants: Specific gravity 0.9669; boiling-point 130° - 131° C.

Soluble in alcohol, ether, and dilute acids; insoluble in water and dilute alkalis.

Derivation: By the fractional distillation of bone-tar or bone-oil with sulfuric acid.

Method of purification: Conversion into the potassium compound (C_4H_4NK) , washing with ether and treatment with water, followed by drying and distillation.

Grades: Technical

Containers: Iron drums.

Uses: Manufacture of drugs.

Fire hazard: None.

Railroad shipping regulations: None.

"Pyxol." A proprietary disinfectant, consisting of an emulsion of coal-tar acids with soap.

Q

Quaker Buttons. See Nux vomica.

Quartz (Silica). Natural, crystallized silicon dioxide, SiO_2 . It is the main constituent of sandstone, and one of the three chief constituents of granite and

pegmatite. Varieties of quartz of varying structure and color (usually due to a small amount of an oxide, as of iron, manganese, etc.) are: Agate, amethyst, chalcedony, chert, flint, hyalite, jasper, jaspilite, onyx, opal, rock crystal, rose

quartz, smoky quartz, etc.

Quassia (Bitter ash; Bitterwood tree).

Derivation: The wood or bark of *Picrasma excelsa* or *Quassia amara*; very bitter taste.

Chief constituents: Quassin, quercisol, picrosmin.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Decoction or tincture as a fly poison; surrogate for hops; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Quassia Lignum, B. P. See *Quassia*.

Quebracho (*Aspidosperma*).

Derivation: The bark of *Aspidosperma quebracho-blanco* from Argentina.

Chief constituents: Aspidospermine, tannin, quebrachine.

Grades: Technical.

Containers: Bags.

Uses: Tanning; dyeing; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Quebracho Extract.*

Derivation: From the wood of *Aspidosperma quebracho* and *Quebrachu lorentzu*, which is imported into the United States in logs.

Grades: Liquid 35-37 per cent Tannin. Solid: 65 per cent Tannin.

Containers: Extract: Wooden barrels; tank-cars. Extract (powdered): Wooden casks.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Queen of the Meadow. See *Eupatorium purpureum*.

Queens' Root. See *Stillingia*.

Queensland Asthma Weed. See *Euphorbia pilulifera*.

Quercimetin. See *Quercitrine*.

Quercite. See *Quercitol*.

Quercitin* (Meletin; Quercetinic acid; Tetrahydroxylflavanol)

$C_{15}H_{10}O_7 \cdot 2H_2O$.

Color and properties: Brown, crystalline powder.

Constants: Melting-point 313° - $315^{\circ}C$.; boiling-point: Decomposes when heated slightly above the melting-point.

Soluble in alkalis; slightly soluble in water.

Derivation: Action of dilute sulfuric acid on quercitrine.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Quercitinic Acid. See *Quercitin*.

Quercitol* (Acorn sugar; Quercite; Pentahydroxycyclohexane)

$C_6H_7(OH)_5$.

Color and properties: Colorless crystals; sweet taste.

Constants: Specific gravity 1.5845; melting-point $234^{\circ}C$.

Soluble in water; very slightly soluble in alcohol; insoluble in ether.

Derivation: By extraction of acorn meal with water.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Quercitrin* (Quercimetin; Quercitrinic acid) $C_{21}H_{22}O_{12} \cdot 2H_2O$.

Color and properties: Yellow glucosidal, crystalline powder.

Constants: Melting-point: Decomposes at $168^{\circ}C$.

Soluble in acids, alkalis and amyl alcohol; slightly soluble in alcohol, ether and water.

Derivation: By extraction of the bark of the black oak, *Quercus tinctoria*.

Grades: Technical.

Containers: Wooden kegs.

Uses: Manufacture of quercitin.

Fire hazard: None.

Railroad shipping regulations: None.

Quercitrinic Acid. See *Quercitrine*.

Quercitron.*

Derivation: The powdered bark of *Quercus coccinea*, var. *tinctoria*.
Grades: Extract 25 per cent tannin.
Containers: Bark: Burlap bags. Extract: Wooden barrels.
Uses: Leather industry; textile industry.
Fire hazard: None.
Railroad shipping regulations: None.

Quercus.*

Derivation: The dried bark of the white oak, *Quercus alba*, containing quercitannic acid, oak-red, resin, pectin, levulin and gallic acid.
Grades: Technical; U. S. P.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Quercus Pedunculata.

Derivation: The bark of the British oak, containing large amounts of tannin.
Grades: Technical.
Containers: Bags.
Uses: Tanning industry.
Fire hazard: None.
Railroad shipping regulations: None.

Quicklime. See Calcium oxide.

Quicksilver. See Mercury.

Quillaia. See Quillaja.

Quillaia Cortex, B. P. See Quillaja.

Quillaja (Soap bark; Quillaia; Panama bark; China bark; Murillo bark).

Derivation: The dried bark of *Quillaja saponaria* from Bolivia, Peru, Chili, etc.
Chief constituents: Quillaia acid; quillaia saponin and tannin.
Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine; manufacture of saponin, saponin and quillaia acid, in the soft-drink and shampoo liquid

industries as a foam producer; emulsifiant for oils, balsams and resins.
Fire hazard: None.
Railroad shipping regulations: None.

Quinaldine* (Chinaldine; Alpha-methyl-quinoline) $C_9H_8N.CH_3$.

Color and properties: Yellow oily liquid; odor of quinoline; darkens to reddish-brown in air.
Constants: Specific gravity 1.1013; boiling-point 246° - $247^{\circ}C$.
Soluble in alcohol, ether and chloroform; insoluble in water.
Derivation: (a) By the treatment of aniline and paraldehyde with hydrochloric acid and heat. (b) From coal-tar.
Grades: Technical.
Containers: Iron drums.
Uses: Manufacture of quinoline yellow.
Fire hazard: None.
Railroad shipping regulations: None.

Quinaphthol* (Quinine beta-naphtholmonosulfonate; Chinaphthol)

$C_{20}H_{24}N_2O_2.(OHC_{10}H_6.SO_3H)_2$.
Color and properties: Yellow, crystalline powder; containing 42 per cent of quinine.
Constants: Melting-point 185° - $186^{\circ}C$.
Soluble in water and alcohol.
Derivation: By the interaction of quinine and beta-naphtholmonosulfonic acid.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Quinazarin* (Quinizarin; Chinizarin; Dihydroxyanthraquinone)

$C_6H_4(CO_2).C_6H(OH)_3$.
Color and properties: Lustrous, orange-red crystals.
Constants: Melting-point 194° - $195^{\circ}C$.
Soluble in alcohol and ether.
Derivation: (a) By the action of concentrated sulfuric and boric acids on anthraquinone. (b) By heating hydroquinone and phthalic anhydride

for two hours with concentrated sulfuric acid. The solution is poured into water, the precipitate washed with hot water and boiled with glacial acetic acid.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Production of quinazarin green and analogous dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Quince Seed. See Cydonia.

Quinic Acid. See Acid quinic.

Quinidine* (Chinidine; Conchinine; Beta-quinine; Cinchotine; Pitayin)
 $C_{20}H_{24}N_2O_2$.

Color and properties: Colorless, lustrous, crystalline alkaloid; efflorescing on exposure to air.

Constants: Melting-point 171.5°C .

Soluble in alcohol, ether and benzol; very slightly soluble in water.

Derivation: By the extraction of some species of cinchona bark.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine; used as the alkaloid or as the bisulfate, citrate, hydrobromide, sulfate or tannate, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Quinina, U. S. P. See Quinine.

Quininæ Bisulfas, U. S. P. See Quinine.

Quininæ Dihydrochloridum, U. S. P., B. P. See Quinine.

Quininæ et Ureæ Hydrochloridum, U. S. P. Quinine and urea hydrochloride.

Quininæ Hydrobromidum, U. S. P. See Quinine.

Quininæ Hydrochloridum, U. S. P., B. P. See Quinine.

Quininæ Hydrochloridum Acidum, B. P. See Quinine.

Quininæ Salicylas, U. S. P. See Quinine.

Quininæ Sulfas, U. S. P., B. P. See Quinine.

Quininæ Tannas, U. S. P. See Quinine.

Quinine* $C_{20}H_{24}N_2O_2 \cdot 3H_2O$.

Color and properties: Bulky, white, amorphous powder or crystalline alkaloid; very bitter taste; odorless and laevo-rotatory.

Constants:

Alkaloid, anhydrous: $C_{20}H_{24}N_2O_2$

Alkaloid, hydrous: $C_{20}H_{24}N_2O_2 \cdot 3H_2O$

Bisulfate: $C_{20}H_{24}N_2O_2 \cdot H_2SO_4 \cdot 7H_2O$

Hydrobromide: $C_{20}H_{24}N_2O_2 \cdot HBr \cdot H_2O$

Hydrochloride: $C_{20}H_{24}N_2O_2 \cdot HCl \cdot 2H_2O$

Salicylate: $C_{20}H_{24}N_2O_2 \cdot C_7H_5O_2 \cdot H_2O$

Melting-point

174.0°C

57.0°

160.0° (about)

152° – 200°

156° – 200°

183° – 187°

Soluble in alcohol, ether, chloroform, carbon bisulfide, benzene, oils, glycerine, potassium hydroxide solution; ammonium hydroxide and acids (with formation of salts); very slightly soluble in water.

Derivation: Finely ground cinchona bark mixed with lime is extracted with hot high-boiling paraffin oil. The solution is filtered, shaken with dilute sulfuric acid, the latter neutralized hot with sodium carbonate and on cooling quinine sulfate crystallizes out. The sulfate is treated with ammonia, the alkaloid being obtained.

Method of purification: Precipitation as tartrate from its solution by means of Rochelle salt.

Impurities: Other cinchona alkaloids.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Used in medicine as the alkaloid or as the acetate, albuminate, arsenate, benzoate, bisulfate, camphorate, citrate, gallate, glycerophosphate, lactate, phenolate, hydrobromide, hydrochloride, phosphate, salicylate, sulfate, tannate, tartrate, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Quinine Beta-naphtholsulfonate. See Quinaphthol.

Quercitron.*

Derivation: The powdered bark of *Quercus coccinea*, var. *tinctoria*.
 Grades: Extract 25 per cent tannin.
 Containers: Bark: Burlap bags. Extract: Wooden barrels.
 Uses: Leather industry; textile industry.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quercus.*

Derivation: The dried bark of the white oak, *Quercus alba*, containing quercitannic acid, oak-red, resin, pectin, levulin and gallic acid.
 Grades: Technical; U. S. P.
 Containers: Bags.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quercus Pedunculata.

Derivation: The bark of the British oak, containing large amounts of tannin.
 Grades: Technical.
 Containers: Bags.
 Uses: Tanning industry.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quicklime. See Calcium oxide.

Quicksilver. See Mercury.

Quillaia. See Quillaja.

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Quillaja (Soap bark; Quillaia; Panama bark; China bark; Murillo bark).

Derivation: The dried bark of *Quillaja saponaria* from Bolivia, Peru, Chili, etc.
 Chief constituents: Quillaia acid; quillaia saponin and tannin.
 Grades: Technical; U. S. P.; B. P.
 Containers: Bags.
 Uses: Medicine; manufacture of saponin, saponin and quillaia acid, in the soft-drink and shampoo liquid

industries as a foam producer; emulsifiant for oils, balsams and resins.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quinaldine* (Chinaldine; Alpha-methyl-quinoline) $C_9H_8N.CH_3$.

Color and properties: Yellow oily liquid; odor of quinoline; darkens to reddish-brown in air.
 Constants: Specific gravity 1.1013; boiling-point 246° - $247^{\circ}C$.
 Soluble in alcohol, ether and chloroform; insoluble in water.
 Derivation: (a) By the treatment of aniline and paraldehyde with hydrochloric acid and heat. (b) From coal-tar.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Manufacture of quinoline yellow.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quinaphthol* (Quinine beta-naphtholmonosulfonate; Chinaphthol)

$C_{20}H_{24}N_2O_2.(OHC_{10}H_6.SO_3H)_2$.
 Color and properties: Yellow, crystalline powder; containing 42 per cent of quinine.
 Constants: Melting-point 185° - $186^{\circ}C$.
 Soluble in water and alcohol.
 Derivation: By the interaction of quinine and beta-naphtholmonosulfonic acid.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quinazarin* (Quinizarin; Chinizarin; Dihydroxyanthraquinone)

$C_6H_4(CO_2).C_6H(OH)_3$.
 Color and properties: Lustrous, orange-red crystals.
 Constants: Melting-point 194° - $195^{\circ}C$.
 Soluble in alcohol and ether.
 Derivation: (a) By the action of concentrated sulfuric and boric acids on anthraquinone. (b) By heating hydroquinone and phthalic anhydride

R

R Acid. See Acid naphtholdisulfonic, Beta-.

R Salt. The sodium salt of Acid naphtholdisulfonic, Beta-.

Racemic Acid. See Acid racemic.

Radium Ra.

Color and properties: An exceedingly rare metal occurring in uranium ores, and never isolated as such, always obtained as the bromide or chloride, admixed with barium salts. All radium salts exhibit the phenomena of "radioactivity," i.e. emitting various penetrating radiations and spontaneously breaking down into a series of decomposition products, of which the first is the radium emanation or Niton.

Constants: Melting-point 700°C .

Radium Bromide* RaBr_2 .

Color and properties: White crystals, becoming yellow or pink with age; radioactive; powerful corrosive effect on skin and flesh. Do not handle.

Constants: Melting-point: Sublimes at 900°C .

Derivation: Carnotite, pitchblende or other uranium ore is roasted with sodium carbonate, washed with water and dilute sulfuric acid to remove uranium; the residue is boiled with sodium hydroxide to remove sulfates, washed with water, then treated with hydrochloric acid, sodium carbonate, water and hydrochloric acid in succession. The solution is treated with sulfuric acid, filtered and the precipitate boiled with sodium carbonate, then treated with hydrochloric acid, hydrogen sulfide, chlorine, ammonium hydroxide and sodium carbonate successively. The solution is now treated with hydrobromic acid to convert into the bromide, evaporated to dryness and purified.

Method of purification: Fractional crystallization.

Impurities: Barium salts.

Grades: Technical; pure. The purity is determined by the strength of the ionizing power of the salt, i.e., the extent to which it causes air to conduct electricity.

Containers: Glass bottles; sealed tubes enclosed in sheet lead.

Uses: Medicine, chiefly in the treatment of cancer; mixed with calcium sulfide to produce luminescent paint; physical research.

Fire hazard: None.

Railroad shipping regulations: None.

Radium Chloride* RaCl_2 .

Color and properties: Yellowish-white crystals, becoming yellow or pink on standing; radioactive; powerful corrosive effect on skin and flesh. Do not handle.

Constants: Melting-point 1650°C .

Soluble in water and alcohol.

Derivation: Carnotite, pitchblende or other uranium ore is roasted with sodium carbonate, washed with water and dilute sulfuric acid to remove uranium; the residue is boiled with sodium hydroxide to remove sulfates, washed with water, then treated with hydrochloric acid, sodium carbonate, water and hydrochloric acids in succession. The solution is treated with sulfuric acid, filtered and the precipitate boiled with sodium carbonate, then treated with hydrochloric acid, hydrogen sulfide, chlorine, ammonium hydroxide and sodium carbonate successively. The solution is now treated with hydrochloric acid to convert into the chloride, evaporated to dryness and purified.

Method of purification: Fractional crystallization.

Impurities: Barium salts.

Grades: Technical; pure. The purity of radium salts is determined by the strength of their ionizing power, i.e. the extent to which they cause air to conduct electricity.

Containers: Glass bottles; sealed tubes enclosed in sheet lead.

Uses: Medicine, chiefly in the treatment of cancer; mixed with calcium

Quercitron.*

Derivation: The powdered bark of *Quercus coccinea*, var. *tinctoria*.
 Grades: Extract 25 per cent tannin.
 Containers: Bark: Burlap bags. Extract: Wooden barrels.
 Uses: Leather industry; textile industry.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quercus.*

Derivation: The dried bark of the white oak, *Quercus alba*, containing quercitannic acid, oak-red, resin, pectin, levulin and gallic acid.
 Grades: Technical; U. S. P.
 Containers: Bags.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quercus Pedunculata.

Derivation: The bark of the British oak, containing large amounts of tannin.
 Grades: Technical.
 Containers: Bags.
 Uses: Tanning industry.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quicklime. See Calcium oxide.

Quicksilver. See Mercury.

Quillaia. See Quillaja.

Quillaia Cortex, B. P. See Quillaja.

Quillaja (Soap bark; Quillaia; Panama bark; China bark; Murillo bark).

Derivation: The dried bark of *Quillaja saponaria* from Bolivia, Peru, Chili, etc.
 Chief constituents: Quillaia acid; quillaia saponin and tannin.
 Grades: Technical; U. S. P.; B. P.
 Containers: Bags.
 Uses: Medicine; manufacture of saponin, saponin and quillaia acid, in the soft-drink and shampoo liquid

industries as a foam producer; emulsifiant for oils, balsams and resins.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quinaldine* (Chinaldine; Alpha-methyl-quinoline) $C_9H_8N.CH_3$.

Color and properties: Yellow oily liquid; odor of quinoline; darkens to reddish-brown in air.
 Constants: Specific gravity 1.1013; boiling-point 246° - $247^{\circ}C$.
 Soluble in alcohol, ether and chloroform; insoluble in water.
 Derivation: (a) By the treatment of aniline and paraldehyde with hydrochloric acid and heat. (b) From coal-tar.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Manufacture of quinoline yellow.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quinaphthol* (Quinine beta-naphtholmonosulfonate; Chinaphthol)

$C_{20}H_{24}N_2O_2.(OHC_{10}H_6.SO_3H)_2$.
 Color and properties: Yellow, crystalline powder; containing 42 per cent of quinine.
 Constants: Melting-point 185° - $186^{\circ}C$.
 Soluble in water and alcohol.
 Derivation: By the interaction of quinine and beta-naphtholmonosulfonic acid.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Quinazarin* (Quinizarin; Chinizarin; Dihydroxyanthraquinone)

$C_6H_4(CO_2).C_6H(OH)_3$.
 Color and properties: Lustrous, orange-red crystals.
 Constants: Melting-point 194° - $195^{\circ}C$.
 Soluble in alcohol and ether.
 Derivation: (a) By the action of concentrated sulfuric and boric acids on anthraquinone. (b) By heating hydroquinone and phthalic anhydride

- Red Cinchona.** See Cinchona bark, Succirubra.
- Red Couch-grass.** See Carex.
- Red Iron Ore.** See Hematite.
- Red Lead.** See Lead oxide, Red.
- Red Liquor.** See Aluminum acetate.
- Red Mercury Iodide.** See Mercuric iodide.
- Red Mercury Oxide.** See Mercuric oxide.
- Red Mercury Sulfuret.** See Mercury sulfide, Red.
- Red Mustard.** See Sinapis nigra.
- Red Oil.** See Acid oleic.
- Red Orpiment.** See Arsenic sulfide, Red.
- Red Oxide.** See Iron sesquioxide.
- Red Pepper.** See Capsicum.
- Red, Persian.** See Lead chromate.
- Red Peruvian Bark.** See Cinchona bark, Succirubra.
- Red Precipitate.** See Mercuric oxide.
- Red Prussiate of Potash.** See Potassium ferricyanide.
- Red Prussiate of Soda.** See Sodium ferricyanide.
- Red Puccoon.** See Sanguinaria.
- Red Root.** See Sanguinaria.
- Red Santal Wood.** See Santalum rubrum.
- Red Saunders.** See Santalum rubrum.
- Red, Stone.** See Ferric oxide.
- Red, Venetian.** See Ferric oxide.
- Red Zinc Oxide.** See Zincite.
- Reddle.** An ochreous, red clay from Arkansas.
- "Redmanol."*** An organic phenolic condensation product invented by L. V. Redman and used for production of plastics, artificial amber, electrical insulation, lacquers, etc.
- Regulus of Antimony.** See Antimony.
- Rendrock.** A dynamite in which the nitroglycerin is mixed with an alkaline nitrate, wood-fiber and paraffin.
- Rennet.** See Enzymes, page 504.
- Reseda Oil.** See page 508.
- Resin, Benzoin.** See Gum benzoin, Siam.
- Resin, Burgundy.** See Pitch, Burgundy.
- Resin, Copaiba.** See Copaiba.
- Resin, Copal.** See Copal.
- Resin, Damar.** See Gum damar.
- Resin, Elemi.** See Gum elemi.
- Resin, Jalap.** See Jalap.
- Resin, Kalandana.** See Kalandana resin.
- Resin, Kino.** See Kino.
- Resin, Podophyllum.** See Podophyllin.
- Resin, Tolu.** See Balsam tolu.
- Resin, Xanthorrhæa.** See Gum accroides.
- Resina, U. S. P., B. P.** See Colophony.
- Resina Jalapæ, U. S. P.** See Jalap.

Resina Podophylli, U. S. P. See Podo-
phyllum.

Resina Scammoniae, U. S. P. Resin of
scammony.

Resinette. A synthetic resin produced
by condensing phenol and formalde-
hyde.

Resinite. A synthetic resin produced by
condensing phenol and formaldehyde.

Resorcin. See Resorcinol.

Resorcinol* (Resorcin; Meta-dioxyben-
zene; Dioxybenzene) $C_6H_4(OH)_2$.

Color and properties: Very white crys-
tals, becoming pink on exposure to
light when not perfectly pure; un-
pleasant, sweet taste.

Constants: Specific gravity 1.2717; melt-
ing-point $110^{\circ}C$; boiling-point $280^{\circ}C$.

Soluble in water, alcohol, benzol and
amyl alcohol.

Derivation: By fusing benzene-meta-
disulfonic acid with sodium hydrox-
ide, dissolving the melt in water, acid-
ifying the solution with hydrochloric
acid and extracting the resorcinol
with a volatile solvent, followed by
evaporation of the latter.

Method of purification: Redistillation.

Impurities: Diresorcinol; phenol; sali-
cyclic acid.

Grades: U. S. P.; B. P.; powder; re-
sublimed; pure; reagent; commercial;
crude.

Containers: Tin cans; amber glass bot-
tles.

Uses: Manufacture of dyestuffs; medi-
cine; hair tonics, reagent in analytical
chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Note: There is also a compound called
resorcinol" obtained by melting the
above with iodoform.

Resorcinolphthalein. See Fluorescein.

Resorcinum, B. P. See Resorcinol.

Retinol. See Rosin oil.

Retort Carbon. See Graphite.

R G Acid. Acid naphtholdisulfonic, Al-
pha-.

R G Salt. The sodium salt of Acid naph-
tholdisulfonic, Alpha-.

Rhatany. See Krameria.

Rhei Rhizoma, B. P. See Rhubarb.

Rheum, U. S. P. See Rhubarb.

Rheumatism Weed. See Chimaphila.

Rhodanates. The same as sulfocyanates.
See under the individual metals which
form sulfocyanates.

Rhodianides. The same as sulfocyanides.
See under the individual metals which
form sulfocyanides.

Rhodium* Rh.

Color and properties: Grayish-white,
ductile, malleable, hard metal.

Constants: Specific gravity 12.1; melt-
ing-point $1970^{\circ}C$.

Soluble in aqua regia, when alloyed
with platinum.

Derivation: By solution of platinum
ores or native platinum in aqua regia,
successive removal of the iridium and
platinum, concentration of the solu-
tion and ignition.

Impurities: Platinum; iridium; palla-
dium.

Grades: Metal; powder.

Containers: Canvas sacks.

Uses: Manufacture of rhodium steel;
electrical pyrometers.

Fire hazard: None.

Railroad shipping regulations: None.

Rhodium (Rose wood).

Derivation: Wood of *Convolvulus sco-*
parius.

Habitat: Canary Islands and West In-
dies.

Grades: Technical.

Containers: Bags.

Uses: Cabinet making; perfumery; the
volatile oil is used as a bait for
marten and fox.

Fire hazard: None.
Railroad shipping regulations: None.

Rhodochrosite. The natural manganese carbonate, $MnCO_3$, from Colorado or Georgia.

Rhodolite. See Garnet.

Rhodonite. The manganese silicate, $MnSiO_3$, found in California, Maine, Massachusetts, Montana, New York and Rhode Island.

Rhoeados Petula, B. P. Red-poppy petals.

Rhubarb.*

Derivation: The dried rhizome of *Rheum officianale*, *R. palmatum*, etc.
Habitat: Central Asia, Europe and Southern Siberia.
Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Rhus Glabra, U. S. P. See Sumac.

Rhus Toxicodendron* (Poison ivy; Poison oak; climbing ivy; Three-leaved ivy; Poison vine).

Derivation: The leaves of *Rhus radicans* (toxicodendron).

Chief constituents: Toxicodendrol, toxicodendric acid, resin, gum, rhus-tannic acid and wax.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Rice's Bromine Solution. A reagent used for the quantitative determination of urea. Bromine 125 g.; Sodium bromide 125 g.; Water to make 1000 cc.

Ricinoleic Acid. See Acid ricinoleic.

Ricinus* (Castor oil plant; Palma christi; Mexico seed; Oil plant; Castor bean).

Derivation: The seeds of *Ricinus communis*.

Habitat: East Indies, West Indies, Southern Europe, Africa and U. S.

Grades: Technical.

Containers: Bags.

Uses: Source of castor oil.

Fire hazard: None.

Railroad shipping regulations: None.

Ricinus Oil. See Castor oil.

Riegler's Test. A reagent composed of sodium naphthionate and beta-naphthol, for the detection of nitrous acid in very small amounts.

Roburite. A powerful explosive, used in coal mining consisting of chlorodinitrobenzene and ammonium nitrate.

Rochelle Salt. See Potassium-sodium tartrate.

Rock Alum. See Aluminum oxide.

Rock Crystal. See Quartz.

Rock Oil. See Petroleum.

Rock Salt. See Sodium chloride.

Rock Salt Moss. See Chondrus.

Rongalite. A sodium hydrosulfide-formaldehyde compound used in the textile industry for discharging dyestuffs.

Rosa Gallica (French rose; Dutch rose; Provins rose; Red rose).

Derivation: Dried petals of *Rosa gallica*.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; perfumery; flavoring; source of rose oil.

Fire hazard: None.

Railroad shipping regulations: None.

Rosæ Gallicæ Petala, B. P. See *Rosa gallica*.

Roscoelite. A vanadium mica carrying

sometimes as much as 28 per cent. of V_2O_5 , sometimes used as a vanadium ore. Colorado, etc.

Roseine. See Fuchsine.

Rosemary* (Garden rosemary).

Derivation: Flowers and leaves of *Rosmarinus officinalis*.

Habitat: Mediterranean basin; cultivated in gardens.

Grades: Technical.

Containers: Boxes.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Rosenstiehl's Green. See Barium manganate.

Rose Oil.*

Color and properties: Pale yellow, transparent, volatile, liquid oil; mild, sweet taste; strong, fragrant odor; semi-solid at ordinary temperature.

Chief constituents: Geraniol, citronellol and phenylethyl alcohol

Constants: Specific gravity 0.845-0.865; solidifying-point 18° - 37° C.; saponification value 10-17; acid value 0.5-3.

Derivation: (a) By steam distillation of the fresh flowers of *Rosa damascena*. (b) By extraction from the flowers of *Rosa centifolia*.

Grades: Bulgarian; German; French; U. S. P.

Containers: Copper flasks; glass bottles.

Uses: Perfumes; flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Rose Quartz. See Quartz.

Rose's Metal. See Metal, Fusible, Rose.

Rosemary Oil. See page 508.

Rosin. See Colophony.

Rosinjack. See Sphalerite.

Rosin Oil (Retinol; Rosinol; Codoil).

Color and properties: Water-white to brown liquid; odorless; strong, peculiar taste.

Constants: Specific gravity 0.980-1.110. Soluble in ether, chloroform, fatty oils

and carbon bisulfide; slightly soluble in alcohol.

Derivation: By fractional distillation of rosin in a retort, that portion distilling above 300° C. being rosin oil.

Method of purification: Treatment with sulfuric acid, followed by lime water and subsequent distillation.

Grades: Technical.

Containers: Wooden barrels.

Uses: Lubricant; adulterant for boiled linseed oil.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Rosinol. See Rosin oil.

Rosolic Acid. See Acid rosolic.

Rotten-stone. See Tripoli.

Rouge. See Ferric oxide, Red.

Rouge, Black. See Ferric oxide, Black.

Rowlandite. Natural yttrium silicate, $2Yt_2O_3 \cdot 3SiO_2$, from Texas.

Rubber. See Caoutchouc, page 503.

Rubellite. One of the Tourmalines.

Rubidium Rb.

Color and properties: Soft, silvery-white metal; very easily oxidized in air. Must be kept immersed in naphtha, kerosene or the like.

Constants: Specific gravity 1.532; melting-point 39° C.; boiling-point 696° C. Soluble in acids and alcohol; decomposes water.

Derivation: (a) Rubidium chloride is fused and electrolyzed.

(b) Rubidium hydroxide is heated with aluminum in a current of hydrogen.

Method of purification: Redistillation.

Grades: Technical.

Containers: Glass bottles.

Uses: Rubidium salts.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Rubus* (Blackberry).

Derivation: The dried root-bark of *Rubus villosus*.

Habitat: Eastern United States.
 Grades: Technical; U. S. P.
 Containers: Bags.
 Uses: Medicine.
 Fire hazard: None.
 Railroad shipping regulations: None.

Ruby. A gem-stone consisting of clear red corundum (aluminum oxide).

Ruby Silver, Dark. See Pyrargyrite.

Ruby Silver, Light. See Proustite.

Ruby Wood. See Santalum rubrum.

Ruthenium Ru.
 Color and properties: Grayish-black, brittle metal.

Constants: Specific gravity 8.6; melting-point: Above 1950°C.
 Soluble in aqua regia; insoluble in water, alcohol and ether.
 Derivation: From platinum ore.
 Grades: Technical.
 Containers: Glass bottles.
 Uses: Ruthenium salts; alloys.
 Fire hazard: None.
 Railroad shipping regulations: None.

Rutile. The most important and plentiful source of titanium, being natural crystallized titanium oxide, TiO_2 . Occurs in Arkansas, Colorado, Connecticut, North Carolina, South Carolina and Virginia.

S

S Acid. Acid aminonaphtholsulfonic. 1:8:4.

Sabadilla (Cevadilla; Indian barley-caustic).

Derivation: Seeds of *Asagrea officinalis*.

Habitat: Mexico to Guatemala and Venezuela.

Grades: Technical.

Containers: Bags.

Uses: Medicine; source of veratrine.

Fire hazard: None.

Railroad shipping regulations: None.

Sabal* (Saw palmetto).

Derivation: Partly dried ripe berries of *Serenoa serrulata*.

Habitat: South Carolina to Florida and West Indies.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sabina. See Savin.

Saccharin* (Benzoylsulfonic imide; Benzoylsulfonimide; Neo-saccharin; Gluside; Saccharol; Glycosine; Saxin; Sykose; Glusimide; Garantose; Glusidum; Glycophenol; Saccharinol; Saccharin-

ose; Ortho-benzoic sulfimide)
 $C_6H_4COSO_2NH$.

Color and properties: White, crystalline powder; exceedingly sweet taste (500 times that of cane-sugar).

Constants: Melting-point: Decomposes at 220°C.

Soluble in amyl acetate, ethyl acetate, benzol and alcohol; slightly soluble in water.

Derivation: A mixture of toluenesulfonic acids is converted into the sodium salt, then distilled with phosphorus trichloride and chlorine to obtain the ortho-compound, which, by means of ammonia is converted into ortho-toluenesulfamide. This is oxidized with permanganate to the alkali salt of ortho-benzenesulfaminic acid and the latter treated with acid and saccharin crystallized out.

Method of purification: Recrystallization.

Grades: Commercial; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Manufacture of sirups; medicine; substitute for sugar, particularly in diabetes; sweetening champagne, oils, soft drinks, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Saccharin, Soluble. See Sodium benzo-sulfinide.

Saccharinol. See Saccharin.

Saccharinose. See Saccharin.

Saccharol. See Saccharin.

Saccharolactic Acid. See Acid mucic.

Saccharose. See Sugar, Cane.

Saccharum, U. S. P., B. P. See Sugar, Cane.

Saccharum Lactis, U. S. P., B. P. See Milk sugar.

Saccharum Purificatum, B. P. See Sugar, Cane.

Sacred Bark. See Cascara sagrada bark.

Safflower. See Carthamus.

Saffron. See Crocus.

Safranine. A dyestuff, also known as Aniline rose or Aniline pink, prepared by oxidizing para-toluylenediamine, aniline and ortho-toluidine.

Safrole* (Allylpyrocatecholmethylene ether; Shikimol) $C_8H_8C_6H_3O_2CH_3$. Color and properties: A colorless or pale yellow, liquid oil; odor of sassafras; is the odor-giving constituent of sassafras, camphor-wood and other oils; poisonous.

Constants: Specific gravity 1.0960; solidifying-point $-20^{\circ}C$.; melting-point $11^{\circ}C$.; boiling-point $233^{\circ}C$.

Soluble in alcohol and ether; insoluble in water.

Derivation: From oil of sassafras or camphor oil.

Method of purification: Rectification or freezing.

Grades: Technical.

Containers: Glass bottles.

Uses: Perfumery and soaps; manufacture of heliotropin, piperonal; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sage. See Salvia.

Sage Oil. See page 508.

Sago Dextrine. See Dextrine.

St. Ann's Bark. See Cinchona bark, Suc-cirubra.

St. Ignatius Beans (Ignatia).

Derivation. The bean of Ignata amara.

Habitat: Philippine Islands.

Grades: Commercial.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

St. John's Bread. See Hypericum, page 505.

Sal Acetosella. See Potassium binoxalate.

Sal Ammoniac. See Ammonium chloride.

Sal Chalybis. See Ferrous sulfate.

Sal Prunella. A very fine potassium nitrate.

Sal Soda. See Sodium carbonate.

Sal Tartar. See Sodium tartrate.

Salad Oil. Any edible oil, used for making salad-dressing, usually olive or cotton-seed oil.

Salicinum, U. S. P., B. P. Salicin.

Salicylic Acid. See Acid salicylic.

Salicylic Acid Methylene Acetate. See Indoform.

Salicylic Acid Phenyl Ester. See Salol.

Salicylic Aldehyde. See Acid salicylous.

Salicylamide* $C_6H_4(OH)CONH_2$.

Color and properties: Colorless, tasteless, gritty, crystalline plates.

Constants: Melting-point $139.9^{\circ}C$.; boiling-point: Decomposes at $270^{\circ}C$.

Soluble in alcohol, ether and chloroform; slightly soluble in water.

Derivation: Treatment of methyl salicylate with dry ammonia gas.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Salicylous Acid. See Acid salicylous.

Salmon Oil.*

Color and properties: Pale golden-yellow liquid; mild, sweet, tolerably pleasant taste.

Constants: Specific gravity 0.9258; saponification value 182-188; iodine value 161.

Soluble in ether, alcohol, chloroform, benzene and carbon bisulfide.

Derivation: A by-product of the salmon canning industry.

Method of purification: Filtration.

Grades: Crude; refined.

Containers: Wood barrels.

Uses: Soap; leather dressing.

Fire hazard: None.

Railroad shipping regulations: None.

Salol* (Phenyl salicylate; Salicylic acid phenyl ester) $C_6H_4OHCO_2C_6H_5$.

Color and properties: White crystals; faint, aromatic odor.

Constants: Specific gravity 1.2614; melting-point $41.9^{\circ}C$.; boiling-point $172^{\circ}-173^{\circ}C$.

Soluble in alcohol, ether, chloroform, benzene and fatty oils; sparingly soluble in water.

Derivation: By heating salicylic acid and phenol with phosphorus pentachloride or other dehydrating agent.

Method of purification: Recrystallization.

Grades: Technical; B. P.

Containers: Glass bottles; tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Saloop. See Sassafras bark.

Salophen. See page 508.

Salt Cake.* The lumps obtained in the furnaces in the manufacture of hydrochloric acid and sodium sulfate, consisting of 92 to 99 per cent of sodium sulfate, and containing sodium bisulfate, calcium sulfate, iron sulfate, iron oxide, magnesium sulfate, silica and sodium chloride as impurities.

Salt, Common. See Sodium chloride.

Salt, Epsom. See Magnesium sulfate.

Salt, Glauber's. See Sodium sulfate.

Salt of Lemon. See Potassium binoxalate.

Salt peter. See Potassium nitrate.

Salt peter, Chili. See Sodium nitrate.

Salt peter, Cubic. See Sodium nitrate.

Salt peter, Soda. See Sodium nitrate.

Salt petre. See Potassium nitrate.

"Salt, Preparing." See Sodium stannate.

Salt, Rock. See Sodium chloride.

Salt, Sea. See Sodium chloride.

"Salt, Silver." The sodium salt of anthraquinonemonosulfonic acid.

Salt of Sorrel. See Potassium binoxalate.

Salt, Table. See Sodium chloride.

Salt of Tartar. See Potassium carbonate.

Salt, Tin. See Stannous chloride.

Salufer. See Sodium silicofluoride.

Salvarsan. See page 508.

Salvia* (Sage; Garden sage).

Derivation: Dried leaves of *Salvia officinalis*.

Habitat: Southern Europe; cultivated in England, France, United States and Italy.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine; condiment.

Fire hazard: None.

Railroad shipping regulations: None.

Salvia Oil. See Sage oil, page 508.

Samarskite. A very complex mineral from North Carolina containing cerium, columbium, tantalum, uranium, yttrium and small amounts of other metals.

Sambucus. See page 509.

Sand Acid. See Acid hydrofluosilicic.

Sand, Glass. A sand of medium grain consisting of 98 to 100 per cent of silica (SiO_2) and never containing as much as 1 per cent of iron oxides. Found in many parts of the country.

Sand, Molding. A sand used for making the molds for casting metal.

Sand Sedge. See *Carex*.

Sand-star. See *Carex*.

Sandalwood.

Derivation: Chips or pieces of the wood of *Pterocarpus santalinus*.

Habitat: Madagascar.

Grades: Technical.

Containers: Bags.

Uses: Perfumes; sandalwood oil.

Fire hazard: None.

Railroad shipping regulations: None.

Sandalwood Oil. See Santalwood oil.

Sandalwood, Red. See *Santalum rubrum*.

Sandarac. See Gum Sandarac.

Sandstone, Asphaltic. A loose-textured sandstone, containing asphalt.

Sandstone, Bituminous. See Sandstone, Asphaltic.

Sangrel. See *Serpentaria*.

Sanguinaria* (Bloodroot; Red puccoon; Red-root; Puccoon root; Tetterwort).

Derivation: Dried rhizome of *Sanguinaria canadensis*.

Habitat: North America.

Grades: Technical, U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Santalum Rubrum (Red saunders; Ruby wood; Red sandilwood).

Derivation: Heartwood of *Pterocarpus santalinus*.

Habitat: East Indies.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Santalwood Oil* (Sandal oil).

Color and properties: A thick, yellow, volatile, liquid oil; spicy taste; aromatic odor.

Chief constituents: Santalene and santalol and esters of the latter, and santenone.

Constants: Specific gravity 0.953-0.985; saponification value 5-15; refractive index 1.505-1.510.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: By steam distillation of the wood of *Santalum album* of India.

Method of purification: Rectification.

Grades: Technical.

Containers: Copper flasks; glass bottles.

Uses: Medicine; perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Santonica (Levant worm-seed; *Semen cinæ*).

Derivation: Dried, unexpanded flower heads of *Artemisia pauciflora*.

Habitat: Persia; Turkestan and Russia.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Santonin. See page 509.

Santoninum, U. S. P., B. P. See *Santonin*, page 509.

Sapo, U. S. P. See Soap.

Sapo Animalis, B. P. Curd soap.

Sapo Durus, B. P. Hard soap.

Sapo Mollis, U. S. P., B. P. See Soap, Soft.

Saponin* $C_{32}H_{52}O_{17}$.

Color and properties: White, amorphous glucoside; pungent, disagreeable taste and odor; poisonous. It foams very strongly when shaken with water.

Chief constituents: Sapotoxin, lactosin and quillajic acid.

Soluble in water.

Derivation: By extraction from the root of *saponaria officinalis*, bark of quillaja root or Indian chestnut.

Grades: Crude, purified; highest purity. Containers: Wooden kegs; glass bottles.

Uses: Foam producer in beverages; detergent in the textile industries; sizing; substitute for soap; fire extinguishers.

Fire hazard: None.

Railroad shipping regulations: None.

Sappan Wood.

Derivation: A redwood of commerce, *Casalpinia sappan*.

Habitat: China, Japan and Siam.

Grades: Technical; B. P.

Containers: Bags.

Uses: Textile dyeing; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sardine Oil.*

Color and properties: Pale golden-yellow liquid.

Constants: Specific gravity 0.9274-0.9330; melting-point 28° - 36° C.; acid value 4-25; Hehner value 95-97; saponification value 189-193; iodine value 181-193; refractive index 1.4802-1.4808.

Soluble in alcohol, ether, chloroform, benzene and carbon bisulfide.

Derivation: By chopping up sardines and subjecting them to boiling and pressing.

Grades: Crude; refined.

Containers: Wooden barrels.

Uses: Soap; leather stuffing; lubricant.

Fire hazard: None.

Railroad shipping regulations: None.

Sarsaparilla.*

Derivation: The dried root of *Smilax officinalis*, etc.

Habitat: Southern U. S., Honduras, Jamaica, Mexico, Guatemala and Brazil.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine; soft drinks.

Fire hazard: None.

Railroad shipping regulations: None.

Sassafras Bark* (*Saxifrag*; *Ague tree*; Cinnamon wood; *Saloop*).

Derivation: The dried bark of root of *Sassafras variifolium*.

Habitat: North America.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine; confectionery; flavoring.

Fire hazard: None.

Railroad shipping regulations: None.

Sassafras Oil.*

Color and properties: Yellowish or reddish-yellow, volatile liquid oil; pungent, aromatic odor and warm, aromatic taste.

Chief constituents: Safrol, eugenol, camphor, pinene, phellandrene.

Constants: Specific gravity 1.065-1.095; optical rotation $+1$ to $+4$.

Soluble in alcohol, ether, chloroform, glacial acetic acid and carbon bisulfide.

Derivation: Distillation of the bark of *Sassafras officinalis*.

Method of purification: Rectification.

Impurities: Terpenes.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Flavoring; perfumery; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sassafras Pith.*

Derivation: The dried pith of *Sassafras variifolium*.

Habitat: North America.

Grades: Technical; U. S. P.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Satin Spar. See Gypsum.

Satureja* (Summer savory).
Derivation: The herb of the summer
savory, *Satureja hortensis*.
Habitat: Europe and U. S.
Grades: Technical.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Savin* (Sabina).
Derivation: Tops of *Juniperus sabina*.
Habitat: Europe, northern Asia, North
America south to New York and
Montana.
Grades: Technical; U. S. P.
Containers: Bags.
Uses: Medicine; savin oil.
Fire hazard: None.
Railroad shipping regulations: None.

Savin Oil.

Color and properties: Colorless to pale
yellow liquid.

Chief known constituents: Sabinol; ca-
dinene; pinene.

Constants: Specific gravity 0.910-0.930;
optical rotation $+40^{\circ}$ to $+60^{\circ}$.

Soluble in alcohol, ether and chloro-
form.

Derivation: Distilled from the fresh
leaves and twigs of *Juniperus sabina*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; copper flasks.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Savory, Summer. See *Satureja*.

Saw Palmetto Berries. See *Sabal*.

Saxifrax. See *Sassafras*.

Saxin. See *Saccharin*.

Saxoline. See *Petrolatum*.

Scabious. See *Erigeron*.

Scammonia ϵ , U. S. P. See Scammony
root.

Scammonia ϵ Radix, B. P. See Scam-
mony root.

Scammonia ϵ Resina, B. P. Scammony
resin.

Scammony Root.

Derivation: Root of *Convolvulus scam-*
monia.

Habitat: Asia Minor and Greece.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Schaeffer's Acid. See Acid beta-naph-
tholsulfonic. 2:6.

Schaeffer's Salt. The sodium salt of
Schaeffer's acid, beta-naphtholsulfonic
acid, used in the manufacture of dye-
stuffs.

Schaffer's Acid. See Acid beta-naph-
tholsulfonic. 2:6.

Schaffer's Salt. See Schaeffer's salt.

Scheele's Green. See Copper arsenite.

Scheelite. Natural, calcium tungstate,
 CaWO_4 , one of the most important
sources of the metal tungsten, contain-
ing about 65 per cent of the latter.
Found in Arizona, California, Colorado,
Connecticut, Idaho, Montana, Nevada,
New Mexico, South Dakota, Utah and
Washington.

Schweinfurth Green. See Copper aceto-
arsenite.

Scilla, U. S. P., B. P. See Squill.

Scoparii Cacumina, B. P. See *Scoparius*.

Scoparius* (Broom; Green broom; Scotch broom; Irish broom; Hogweed; Bannal).

Derivation: Dried tops of *Cytisus scoparius*.

Habitat: Western Asia, Southern and Western Europe; cultivated in the United States.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Scopola (Japanese belladonna).

Derivation: Dried rhizome of *Scopola carniolica*.

Habitat: Japan, Germany, Austria, Hungary and Russia.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Scopolaminæ Hydrobromidum, U. S. P.
Scopolamine hydrobromide.

Scorodite. Natural ferrous arsenate, $\text{Fe}_2\text{O}_3 \cdot \text{As}_2\text{O}_5 \cdot 4\text{H}_2\text{O}$, from Utah and Washington.

Scotch Broom. See *Scoparius*.

Scutellaria* (Skullcap; Helmet flower).
Derivation: Dried plant of *Scutellaria lateriflora*.

Habitat: British America south to Florida and New Mexico.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Scythestone. A whetstone suitable for sharpening scythes.

Sea Moss. See Irish moss.

Sea Onion. See Squill.

Sea Parsley. See Lovage.

Sea Salt. See Sodium chloride.

Seal Oil.*

Color and properties: White or pale yellow to red-brown liquid.

Constants: Specific gravity 0.9240-0.9263; melting-point 22° - 33°C .; acid value 1.9-40; solidifying point -2 to -3 ; Hehner value 93-96; saponification value 189-196; iodine value 127-159; refractive index 1.4741.

Soluble in ether, chloroform, benzine and carbon bisulfide.

Derivation: The membranes of brain and back of seals are allowed to melt and putrefy in the sun, then extracted by boiling with water.

Grades: "Water-white"; "straw seal"; Containers: Wooden barrels.

"yellow seal"; "brown seal."

Uses: Soap manufacture.

Fire hazard: None.

Railroad shipping regulations: None.

Secale Cornutum. See Ergot.

Secondary Butylcarbinol. See Amyl alcohol, Active.

Secondary Calcium Phosphate. Calcium phosphate, Dibasic.

Sedatine. See Antipyrine.

Seed Oil. See Cotton-seed oil.

Seignette Salt. See Potassium-sodium tartrate.

Selenious Acid. See Acid selenous.

Selenite. See Gypsum.

Selenium* Se₈.

Color and properties: Steel-gray, non-metallic rods or buttons; very high luster; crystalline surface on being broken. Also occurs in the form of dark-red crystals or powder, soluble in carbon bisulfide and melting between 170° and 180°C . Selenium burns in air with a bluish-red flame, forming selenium dioxide.

Constants: Specific gravity 4.26-4.28; melting-point 217°C .; boiling-point 600°C .

Soluble in concentrated sulfuric acid; insoluble in water and alcohol.

Derivation: Occurs in nature in copper ores from which it is removed during the electrolytic refining of copper in the mud which settles in the cells. It is obtained by extraction with alkali cyanides and precipitation with hydrochloric acid, followed by oxidation with nitric acid and evaporation, selenium dioxide remaining.

Method of purification: By sublimation and reduction by means of an aqueous solution of sulfur dioxide.

Grades: Technical.

Containers: Glass bottles.

Uses: Photometry; electrical experimental work; glass and rubber manufacture; bacteriology; photography of sound and its reproduction; wireless telephony; biological chemistry. The allotropic, red powder form is used in microscopy as an imbedding material.

Fire hazard: None.

Railroad shipping regulations: None.

Selenous Acid. See Acid selenous.

Semecarpus (Oriental cashew-nut; Malacca nut; Marany nut; Marking nut; Acajou-nut; Mangle).

Derivation: The fruit of *Semecarpus anacardium*.

Grades: Technical.

Containers: Bags.

Uses: Medicine; manufacturing indelible inks; coloring fats and oils black; making the so-called "Silbets" varnish or lacquer for iron and stone vessels; cashew oil.

Fire hazard: None.

Railroad shipping regulations: None.

Semen Cinæ. See *Santonica*.

Semen Erucæ. See *Sinapis alba*.

"Seneca Oil." See *Petroleum*.

Seneca Root. See *Senega*.

Senega* (*Senega* snakeroot; *Seneca* root; *Rattlesnake* root).

Derivation: Dried root of *Polygala senega*.

Habitat: North America (Canada to South Carolina, west to Wisconsin).

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Senega Snakeroot. See *Senega*.

Senegæ Radix, B. P. See *Senega*.

Senegal Gum. See *Gum arabic*.

Senna.

Derivation: Dried leaflets of *Cassia acutifolia*, etc.

Habitat: Nubia, Barbary, Abyssinia, Egypt and Southern India.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sennæ Folia, B. P. See *Senna*.

Sennæ Fructus, B. P. *Senna* pods.

Sepia (Cuttle-fish bone).

Derivation: A calcareous substance found under the skin of the back of the cuttle-fish (*Sepia officinalis*).

Uses: Polishing agent; tooth powders.

Sepia. A reddish-brown pigment prepared from the ink of the cuttlefish. It is a mixture of calcium carbonate, magnesium carbonate, melanin, and an organic black coloring matter.

Sepiolite. See *Meerschäum*.

Sericose. See *Cellulose acetate*.

Serpentaria* (*Virginia* snakeroot; *Snake* root; *Snake* weed; *Sangrel*; *Birthwort*).

Derivation: Dried rhizome and roots of *Aristolochia serpentaria*.

Habitat: U. S.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Serpentariae Rhizome, B. P. See Serpentaria.

Serpentine. See Asbestos.

Serum Antidiphthericum, U. S. P. Antidiphtheric serum.

Serum Antidiphthericum Purificatum, U. S. P. Antidiphtheric serum, Purified.

Serum Antidiphthericum Siccum, U. S. P. Antidiphtheric serum, Dried.

Serum Antitetanicum, U. S. P. Antitetanic serum.

Serum Antitetanicum Purificatum, U. S. P. Antitetanic serum, Purified.

Serum Antitetanicum Siccum, U. S. P. Antitetanic serum, Dried.

Sesame Oil* (Beune oil; Teel oil; Gingelly oil; Gigily oil).

Color and properties. A fixed, bland, yellow, liquid oil. Does not readily become rancid.

Chief known constituents. Olein, stearin, palmitin, myristin, linolein and sesamin.

Constants. Specific gravity 0.9210-0.9244; solidifying-point $-5^{\circ}\text{C}.$; melting-point 26° - $32^{\circ}\text{C}.$; acid value 0.2-46; Lehner value 95.7; saponification value 188-193; iodine value 103-114; refractive index 1.4748-1.4762.

Soluble in chloroform, carbon bisulfide and ether.

Derivation: By pressing from Sesame orientale grown in China, Japan, East Indies and South America.

Method of purification: Filtration.

Grades: Edible, should contain less than 1 per cent free fatty acids; semi-refined; coast.

Containers: Wooden barrels.

Uses: Manufacture of oleomargarine, soap, cosmetics, etc.; general use similar to olive and almond oils which

are frequently adulterated with sesame oil; production of iodipin.

Fire hazard: None.

Railroad shipping regulations: None.

Sevum Benzoatum, B. P. Benzoated suet.

Sevum Præpartum, U. S. P., B. P. Prepared suet.

Shale. A fine-grained rock formed by the consolidation of silt or clay, having a slate-like cleavage. When carrying petroleum in the interstices it is called oil-bearing shale, when carrying bituminous matter which yields oils and tarry substances when destructively distilled it is called oil-shale. Oil-shale occurs in quantity in Scotland where it has been worked for a number of years as a source of oil, gas and tar. It is also found in Kentucky, Colorado, Utah, Nevada, Montana, California and Canada in workable quantities.

Shark Oil* (Dog-fish oil).

Color and properties: Yellow to red-brown liquid; characteristic odor, not disagreeable if the oil is refined.

Constants: Specific gravity 0.9179; saponification value 170; iodine value 126.

Soluble in ether, chloroform, benzine and carbon bisulfide.

Derivation: By expression from the livers of the dog-fish, *Squalus acanthius*.

Method of purification: Filtration.

Grades: Crude; refined.

Containers: Wooden barrels.

Uses: Paints; currying leather; soaps; waterproofing.

Fire hazard: None.

Railroad shipping regulations: None.

Shark-liver Oil.

Color and properties: Yellowish-brown-red liquid.

Constants: Specific gravity 0.9286; refractive index 1.4743; iodine number: 155.

Soluble in chloroform, ether, carbon bisulfide and benzol.

Derivation: Obtained from the livers of the shark, *Hypoprian brevirostris* by the same process employed in the cod-liver oil industry.

Method of purification: Filtration.

Grades: Yellow strained; red; yellow; yellow-red; Japanese; crude; refined.

Containers: Wooden barrels.

Uses: Leather dressing; oil tannage; varnishes; paints.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Sheep Berry. See *Viburnum prunifolium*.

Shellac (Lac, Lacca).

Derivation: A resin produced by the bite or sting of a certain insect (*Coccus lacca*), appearing as a thick excrescence on the small twigs of several species of East Indian trees. It is collected and in this form is known as "stick lac." The crude lac is macerated in order to extract a brilliant red dye known as lac dye. The seed lac is refined by melting and straining and is then poured in thin films over cylinders or plates and allowed to cool. When it hardens and scales off in thin flakes, it is known as shellac, or it is poured into moulds to form "button" or garnet lac. This is the orange shellac of commerce. White shellac is made by bleaching orange shellac with sodium hypochlorite.

Grades: D. C.; V. S. O.; Diamond 1; Superfine orange; Fine orange; Medium orange; T. N.; A. C. garnet; Button; Bleached, ground; Bleached, bone-dry.

Containers: Wooden boxes.

Uses: Varnishes; leather dressing.

Fire hazard: None.

Railroad shipping regulations: None.

Shikimol. See Saffrole.

Shumac. See Sumac.

Siderite (Spathic iron ore). Natural iron carbonate, FeCO_3 , containing 48 per cent of iron occurring in workable quantity in many states and Canada.

Sienna. A brownish orange yellow clay colored by iron and manganese oxides, used as a pigment and found in Alabama, California and Pennsylvania. Also used to designate the color.

Silex. See Quartz.

Silica. See Quartz.

Siliceous Earth. See Kieselgur.

Silicium. See Silicon.

Silicofluoric Acid. See Acid hydrofluosilicic.

Silicon* (Silicium) Si.

Color and properties: (a) Gray, amorphous, non-metallic element, which burns in air when ignited.

(b) Also obtained as* hard, lustrous, crystalline leaflets which do not burn in air. Is a non-conductor of electricity.

| Constants: | (a) | (b) |
|------------------|------|--------|
| Specific gravity | 2.00 | 2.40 |
| Melting-point | .... | 1420°C |
| Boiling-point | .... | 3500°C |

Soluble in hydrofluoric acid and alkalis; insoluble in water, nitric acid and hydrochloric acid.

Derivation: By heating quartz in an electric furnace with wood charcoal, lime and manganese oxide.

Method of purification: Treatment with hydrochloric and hydrofluoric acids.

Impurities: Iron; carbon.

Grades: Technical.

Containers: Wooden kegs.

Uses: Manufacture of silicon tetrachloride, silicon-bronze, silicon-copper and ferro-silicon; production of hydrogen.

Fire hazard: None.

Railroad shipping regulations: None.

Silicon Bronze.* An alloy of copper, tin and silicon used for telephone and telegraph wires.

Silicon Carbide. See Carborundum, Crysotol and Electroton.

Silicon Chloride. See Silicon tetrachloride.

Silicon-Copper* (Copper silicide).

Color and properties: A hard, tough, bronze-like alloy.

Derivation: From silicon and copper electrolytically.

Grades: Technical.

Containers: Boxes.

Uses: Manufacture of silicon-bronze.

Fire hazard: None.

Railroad shipping regulations: None.

Silicon, Ferro. See Ferro-silicon.

Silicon Tetrachloride* (Silicon chloride)
 SiCl_4 .

Color and properties: A clear, colorless, exceedingly mobile, fuming liquid; suffocating odor.

Constants: Specific gravity 1.524; melting-point -89°C .; boiling-point 56.9°C .

Decomposes in water.

Derivation: Silicon carbide is packed around a resistor and electrically heated, whereupon chlorine is passed through the mass and the silicon tetrachloride condensed from the escaping gas.

Impurities: Silicon hexachloride.

Grades: Technical.

Containers: Iron drums.

Uses: Smoke screens in warfare.

Fire hazard: None.

Railroad shipping regulations: White label.

Silicotungstic Acid. See Acid silicotungstic.

Silicowolframic Acid. See Acid silicowolframic.

"Sil-O-Cel." A proprietary brand of kieselgur and heat insulation products made therefrom.

Silver* (Argentum) Ag.

Color and properties: White, malleable, lustrous, soft, ductile metal, sometimes found native, but more frequently as the sulfide or other compound. Silver is found in nature in the following minerals or ores: Acanthite, amalgam, argentite, brongniardite, bromyrite, calaverite, cerargyrite, dyscrastite, electrum, em-

bolite, freibergite, freieslebenite, galena, hessite, iodyrite, krennerite, nagyagite, petzite, polybasite, proustite, pyrargyrite, stephanite, stettfeldite, stromeyerite, sylvanite and xanthoconite. The silver of commerce comes chiefly from galena, argentite, pyrargyrite, cerargyrite and the complex ores from the Cobalt district in Canada. The world's silver now comes chiefly from the U. S., Canada, Mexico, South America and Japan.

Constants: Specific gravity 10.53; melting-point 961.5°C .; boiling-point 1955°C .

Soluble in nitric acid and hot concentrated sulfuric acid; insoluble in water and alkalis.

Derivation: (a) Amalgamation with mercury, which is afterwards distilled off and used again.

(b) Extraction with alkali cyanides followed by precipitation with zinc or aluminum.

(c) By fusion of the ore with lead and oxidation of the latter.

Method of purification: For chemical purposes silver is purified by dissolving in nitric acid, precipitating the chloride with hydrochloric acid, washing the chloride, dissolving and precipitating with pure zinc.

Impurities: Other metals, particularly lead.

Grades: Powder; sheet; foil; bars; wire; droplets.

Uses: Alloys; solder; jewelry; foil; wire; coins; chemical apparatus; manufacture of mirrors; silver plating; table-ware; ornamentation; cutlery; dentistry; surgery preparation of silver salts.

Fire hazard: None.

Railroad shipping regulations: **None.**

Silver Bromide* AgBr.

Color and properties: Pale yellow crystals or powder, darkening on exposure to light, finally turning black.

Constants: Specific gravity 6.473; melting-point 427°C .; boiling-point: Decomposes at 700°C .

Soluble in potassium bromide, potassium cyanide and sodium thiosulfate

solutions; very slightly soluble in water and ammonium hydroxide.
Derivation: Silver nitrate is dissolved in water and a solution of alkali bromide added slowly. The precipitated silver bromide is washed repeatedly with hot water. The whole operation must be carried on in a dark-room under a ruby-red light.
Impurities: Silver nitrate; alkali bromide.
Grades: Technical.
Containers: Amber or black glass bottles.
Uses: Photography.
Fire hazard: None.
Railroad shipping regulations: None.

Silver Chloride* AgCl.

Color and properties: White granular powder, which darkens on exposure to light, finally turning black. Exists in several modifications differing in conduct towards light and also in their solubility in various solvents.
Constants: Specific gravity 5.561; melting-point 451°C.
Soluble in ammonium hydroxide, concentrated sulfuric acid and sodium thiosulfate and potassium bromide solutions; very slightly soluble in water.
Derivation: Silver nitrate solution is heated and hydrochloric acid or salt solution added. The whole is boiled, then filtered, all in the dark or under a ruby-red light.
Method of purification: Re-solution in ammonium hydroxide and precipitation by hydrochloric acid.
Impurities: Silver nitrate.
Grades: Technical.
Containers: Amber or black glass bottles.
Uses: Photography; photometry; silver plating; production of pure silver; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Silver, Colloidal. See Collargol.

Silver Cyanide* AgCN.

Color and properties: White, odorless,

tasteless powder which darkens on exposure to light; very poisonous.
Constants: Specific gravity 3.95; melting-point: Decomposes when heated.
Soluble in ammonium hydroxide, dilute boiling nitric acid and potassium cyanide and sodium thiosulfate solutions; insoluble in water.
Derivation: By adding sodium or potassium cyanide to a solution of silver nitrate.
Grades: Technical.
Containers: Amber or black glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Silver Glance. See Argentite.

Silver Iodide* AgI.

Color and properties: Pale yellow, odorless, tasteless powder, darkening on exposure to light.
Constants: Specific gravity 5.675; melting-point 556°C.
Soluble in hydriodic acid, potassium iodide, potassium cyanide, sodium chloride and sodium thiosulfate solutions; insoluble in water and ammonium hydroxide.
Derivation: Silver nitrate solution is heated, alkali iodide solution added and the precipitate washed with boiling water, in the dark or under ruby-red illumination.
Impurities: Silver nitrate and alkali iodide.
Grades: Technical; pure.
Containers: Amber or black glass bottles.
Uses: Medicine; photography.
Fire hazard: None.
Railroad shipping regulations: None.

Silver Leaf. See Stillingia.

Silver Nitrate* (Lunar caustic) AgNO₃.

Color and properties: Colorless, crystal plates, darkening on exposure to light in presence of organic matter; bitter, caustic metallic taste; poisonous and corrosive.
Constants: Specific gravity 4.352; melting-point 218°C.; boiling-point: Decomposes.

Soluble in water, ether and glycerine.
Derivation: Silver is dissolved in dilute nitric acid, the solution evaporated.

Method of purification: The mass obtained by the evaporation of the solution is heated to a dull red-heat to decompose any copper nitrate and dissolved in water, concentrated and allowed to crystallize.

Impurities: Copper nitrate.

Grades: Crystal; fused; diluted (with potassium nitrate and fused); cones (with 5 per cent AgCl); reagent; technical.

Containers: Amber or black glass bottles.

Uses: Photography; dyeing hair, mother-of-pearl, etc.; reagent in chemical laboratories; silver plating; indelible ink; manufacture of silver salts; glass manufacture; mirror manufacture; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Silver Ore, Brittle. See Stephanite.

Silver Ortho-phosphate. See Silver phosphate.

Silver Oxide* Ag_2O .

Color and properties: Dark brown odorless powder, metallic taste; must not be triturated with organic matter, may cause explosions.

Constants: Specific gravity 7.521; melting-point: Decomposes when heated above 300°C .

Soluble in ammonium hydroxide, potassium cyanide solution, nitric acid and sodium thiosulfate solution; very slightly soluble in water.

Derivation: Silver nitrate and alkali hydroxide solutions are mixed, the precipitate filtered and washed.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; polishing glass.

Fire hazard: None.

Railroad shipping regulations: None.

Silver also forms two other oxides, Ag_4O and Ag_4O , of no commercial importance.

Silver Phenolsulfonate. See Silver sulfocarbolate.

Silver Phosphate* (Silver ortho-phosphate) Ag_3PO_4 .

Color and properties: A yellow powder; turns brown when heated or on exposure to light.

Constants: Specific gravity 7.321; melting-point 840°C .

Soluble in acids, potassium cyanide solution and ammonium hydroxide; very slightly soluble in water.

Derivation: By the interaction of silver nitrate and sodium phosphate.

Grades: Technical.

Containers: Amber or black glass bottles.

Uses: In photographic emulsions instead of the nitrate.

Fire hazard: None.

Railroad shipping regulations: None.

Silver-Potassium Cyanide* $\text{KAg}(\text{CN})_2$.

Color and properties: White crystals; permanent in light; exceedingly poisonous.

Soluble in water and alcohol; insoluble in acids.

Derivation: By adding silver chloride to a solution of potassium cyanide.

Impurities: Silver.

Grades: Technical.

Containers: Glass bottles.

Uses: Silver plating; bactericide; antiseptic.

Fire hazard: None.

Railroad shipping regulations: None.

"Silver Salt." The sodium salt of Anthraquinone monosulfonic acid, used in dyestuff manufacture.

Silver Sulfide* Ag_2S .

Color and properties: A grayish-black, heavy powder.

Constants: Specific gravity 6.85-7.32; melting-point 842°C ; boiling-point: Decomposes.

Soluble in concentrated sulfuric and nitric acids; insoluble in water.

Derivation: By passing hydrogen sulfide gas into silver nitrate solution, washing and drying.

Grades: Technical.
Containers: Glass bottles.
Uses: Inlaying in niello metal-work.
Fire hazard: None.
Railroad shipping regulations: None.

Silver Sulfocarbolate* (Silver sulfophenylate; Silver phenolsulfonate)
 $C_6H_4OHSO_3Ag$.

Color and properties: White, crystalline powder, darkening on exposure to light.

Soluble in water and alcohol.

Derivation: By the interaction of silver oxide and phenolsulfonic acid.

Grades: Technical.

Containers: Amber or black glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Silver Sulfophenylate. See Silver sulfocarbolate.

Simaruba Bark (Mountain damson; Bitter damson; Paradise tree; Paraiba).

Derivation: Bark of *Simaruba officinalis*.

Habitat: Guiana, Martinique and Jamaica.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sinapis Alba* (White mustard; Yellow mustard; *Semen erucæ*).

Derivation: Seed of *Sinapis alba*.

Habitat: Europe; Asia; U. S.

Grades: Technical; U. S. P.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sinapis Nigra* (Black mustard; Red mustard).

Derivation: Seed of *Brassica nigra*.

Habitat: Europe, Asia and U. S.

Grades: Technical; U. S. P.

Containers: Tins.

Uses: Medicine; condiment; mustard oil.

Fire hazard: None.

Railroad shipping regulations: None.

Sipylite. A native erbium columbate, also containing the cerium and other metals. Found in Virginia.

Sisal.

Derivation: From the agave plant, *Agave rigida*, etc.

Habitat: Central America and West Indies.

Grades: Technical.

Containers: Bales.

Uses: Twine manufacture.

Fire hazard: None.

Railroad shipping regulations: None.

Six-o-six. See Salvarsan, page 508.

Skull Cap. See *Scutellaria*.

Slag-wool. See Mineral wool, page 506.

Slaked Lime. See Calcium hydroxide.

Slippery Elm. See *Ulmus*.

Sloe Leaf Viburnum. See *Viburnum prunifolium*.

Sludge, Acid. See Acid sludge.

Small Fennel Flower. See *Nigella sativa*.

Smalt.*

Color and properties: Blue powder.

Derivation: A potash-cobalt glass made by fusing pure sand and potash with cobalt oxide, grinding and powdering.

Grades: Technical.

Containers: Wooden kegs.

Uses: Paint pigment, ceramic industries.

Fire hazard: None.

Railroad shipping regulations: None.

Smaltite. A cobalt diarsenide, $CoAs_2$, found in Ontario and Colorado. When pure contains 28 per cent of cobalt. Sometimes contains considerable amounts of nickel.

Smithsonite. Native zinc carbonate, $ZnCO_3$, containing 52 per cent of zinc, found in many of the states, usually associated with other zinc ores.

Snake Root. See *Serpentaria*.

Snake-root Oil. See Asarum oils.

Snake-root Oil, Canada. See Asarum canadense oil.

Snake-weed. See Euphorbia pilulifera and Serpentaria.

Snow-ball Bush. See Viburnum opulus.

Soamin. See Sodium arsanilate.

Soap.* Usually the sodium salt of oleic, stearic or palmitic acids or of a mixture of these, and in general of the fatty acids contained in natural fats and oils.

The tallow or other fat is mixed and gently heated in a tank with about one-fourth of the amount of caustic soda (in the form of a solution of 10°Be) necessary for complete saponification. After the mass has become homogeneous, additional caustic (in the form of a hot solution of 12° to 14°Be), is gradually added until the well stirred and boiling mixture becomes thick, homogeneous and clear. The mixture is now boiled more vigorously until sufficient water is driven off to leave a homogeneous ropy paste, whereupon solid salt or a concentrated solution of the latter is added to separate the soap from the lye, which is drawn off. The soap is again boiled vigorously for a short time to separate the retained residual lye.

The soap is next either molded at once or after "finishing" with dilute caustic or hot water, by heating, and stirring until it is more liquid and uniform and less granular.

Varieties: Rosin soaps as used for laundry purposes, are made by adding a soap made from rosin, or rosin itself to an ordinary soap. Castile or Marseilles soaps are made from olive oil. Mottled soaps are produced by the addition of small amounts of ferrous sulfate, ferric oxide or ultramarine. Transparent soaps are made from decolorized fats with the addition of glycerine or sugar, or both.

Soap Bark. See Quillaja.

Soap, Green. See Soap, Soft.

Soap, Soft* (Green soap). A yellowish-green, slippery, soft mass made from linseed oil and potassium hydroxide, soluble in hot water and hot alcohol. Uses: In medicine as a detergent, antiseptic and disinfectant, also as a lubricant.

Soapstone. See Talc.

Sod Oil. See Degras.

Soda. See Sodium carbonate.

Soda Alum. See Sodium-aluminum sulfate.

Soda Ash* Na_2CO_3 .

Color and properties: The crude sodium carbonate of commerce, a grayish-white powder or lumps containing up to 99 per cent sodium carbonate.

Soluble in water; insoluble in alcohol.

Derivation: (Solvay process) A cold solution of sodium chloride (common salt) is saturated with ammonia gas, then charged with carbon dioxide gas under pressure. The sodium bicarbonate formed being insoluble in the brine, precipitates. It is filtered off, washed with cold water and calcined.

Impurities: Sodium chloride, sodium sulfate, calcium carbonate and magnesium carbonate.

Containers: Bags; barrels; also shipped in bulk in cars.

Grades: 48 and 58 per cent, light; 48 and 58 per cent, dense; 48 per cent, ordinary (contains sodium chloride); 48 per cent, special contains sodium sulfate); granular. The distinction between "light" and "dense" soda ash is entirely one of consistency, the "dense" soda ash being preferred when small bulk is desired, e.g. in glass manufacture.

Valuation: No uniform system of determining the strength of alkali has been adopted. On the continent of Europe, soda ash is usually sold on the sodium carbonate content, and caustic soda on the content of sodium hydroxide (calculated as sodium carbonate). The actual alkali, sodium oxide (Na_2O), is

determined with the present (true) atomic weights and is 62/106 of the total sodium carbonate, thus reporting 1.886 per cent more alkali than is actually present. In Great Britain the Newcastle test is used, in which the actual alkali is calculated with the former (incorrect) atomic weight of sodium, and is 64/108 of the total sodium carbonate, thus reporting 1.3 per cent more alkali than is actually present. In the United States the "New York and Liverpool" (N. Y. & Liv.) method of testing is almost exclusively in use. It is also based on incorrect constants and by it the actual alkali is called 64/106 of the total sodium carbonate, thus reporting 3.226 per cent more alkali than is actually present. It is decidedly more advantageous to purchase alkali on the basis of exact analysis and not by either the Newcastle or New York and Liverpool tests.

Examples:

| Soda ash | Actual alkali | Newcastle | N. Y. & Liv. |
|--------------------------|-----------------------|-----------------------|-----------------------|
| Na_2CO_3 | Na_2O | Na_2O | Na_2O |
| 97.45% | 57.0% | 57.75% | 58.83% |
| Caustic Soda | Actual alkali | Newcastle | N. Y. & Liv. |
| NaOH | Na_2O | Na_2O | Na_2O |
| 77.40% | 60.0% | 60.79% | 61.93% |

Uses: Manufacture of pure sodium carbonate and bicarbonate, drugs, dye-stuffs, glass, soap, paper, caustic soda, paints, leather, enamel-ware and cleansers; dyeing textiles; water-softening; refining oils; wood preservation; metallurgy; laundering; bottle and dish-washing, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Soda, Baking. See Sodium bicarbonate or Potassium bicarbonate.

Soda, Carbonating. See Sodium carbonate.

Soda, Carbonic. See Sodium carbonate.

Soda, Caustic. See Sodium hydroxide.

Soda Feldspar. See Albite.

Soda Niter. See Sodium nitrate.

Soda Nitre. See Sodium nitrate.

Soda Saltpeter. See Sodium nitrate.

Soda Sulfuret. See Sodium sulfide.

Sodamide. See Sodium amide.

Sodii Acetas, U. S. P. See Sodium acetate.

Sodii Arsenas, U. S. P. See Sodium arsenate.

Sodii Arsenas, Anhydrosus, B. P. See Sodium arsenate.

Sodii Arsenas Exsiccatus, U. S. P. See Sodium arsenate.

Sodii Benzoas, U. S. P., B. P. See Sodium benzoate.

Sodii Benzosulphinidum, B. P. See Sodium benzosulfinide.

Sodii Bicarbonas, U. S. P., B. P. See Sodium bicarbonate.

Sodii Boras, U. S. P. See Sodium borate.

Sodii Bromidum, U. S. P., B. P. See Sodium bromide.

Sodii Cacodylas, U. S. P. See Sodium cacodylate.

Sodii Carbonas, B. P. See Sodium carbonate.

Sodii Carbonas, Exsiccatus, B. P. See Sodium carbonate.

Sodii Carbonas Monohydratus, U. S. P. See Sodium bicarbonate.

Sodii Chloridum, U. S. P., B. P. See Sodium chloride.

Sodii Citras, U. S. P. See Sodium citrate.

Sodii Citro-Tartras Effervescens, B. P. Effervescent sodium citro-tartrate.

Sodii Cyanidum, U. S. P. See Sodium cyanide.

Sodii et Potassii Tartras, B. P. See Potassium-sodium tartrate.

Sodii Glycerophosphas, U. S. P. See Sodium glycerophosphate.

Sodii Hydroxidum, U. S. P. See Sodium hydroxide.

Sodii Hypophosphis, U. S. P., B. P. See Sodium hypophosphite.

Sodii Indigotindisulphonas, U. S. P. Sodium indigotin disulfonate.

Sodii Iodidum, U. S. P., B. P. See Sodium iodide.

Sodii Nitris, U. S. P., B. P. See Sodium nitrite.

Sodii Perboras, U. S. P. See Sodium perborate.

Sodii Phenolsulfonas, U. S. P. Sodium phenolsulfonate.

Sodii Phosphas, U. S. P., B. P. See Sodium phosphate, Monobasic.

Sodii Phosphas Acidus, B. P. See Sodium phosphate, Monobasic.

Sodii Phosphas Effervescens, U. S. P., B. P. Sodium phosphate, Effervescent.

Sodii Phosphas Exsiccatus, U. S. P. See Sodium phosphate.

Sodii Salicylas, U. S. P., B. P. See Sodium salicylate.

Sodii Sulphas, U. S. P., B. P. See Sodium sulfate.

Sodii Sulphas Effervescens, B. P. Sodium sulfate, Effervescent.

Sodii Sulphis, B. P. See Sodium sulfite.

Sodii Sulphis Exsiccatus, U. S. P., B. P. See Sodium sulfite.

Sodii Thiosulphas, U. S. P. See Sodium thiosulfate.

Sodium* (Natrium) Na.

Color and properties: Light, soft, ductile, malleable, silver-white metal, oxidizing rapidly in air; of wax-like consistency at ordinary temperature, but brittle at low temperatures; must be kept immersed in naphtha or other similar liquid which does not contain water or free oxygen.

Constants: Specific gravity 0.9712; melting-point 97.6°C .; boiling-point 877.5°C .

Decomposes water on contact with vigorous evolution of hydrogen and forming sodium hydroxide; insoluble in benzol, benzine, kerosene and naphtha.

Derivation: Electrolysis of molten sodium chloride, using a cathode of molten lead. The sodium-lead alloy which is formed is electrolyzed in a second compartment of the cell.

Method of purification: Distillation.

Grades: Technical.

Containers: Glass bottles; iron canisters.

Uses: Manufacture of other metals; reducing agent in organic synthesis; dehydrating ether; flux; preparation of hydrogen; production of sodium peroxide.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Sodium Acetate* $\text{NaC}_2\text{H}_3\text{O}_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: Colorless crystals, efflorescing on exposure to air. Retains its heat for a long time when fused.

Constants: Specific gravity 1.4; melting-point 58°C .

Soluble in water; slightly soluble in alcohol.

Derivation: (a) Neutralization of pyroligneous acid with sodium carbonate, concentration of the solution, crystallization and centrifugation.

(b) Calcium acetate is treated with sodium sulfate and a little soda, the

solution filtered, evaporated to dryness, the residue heated to about 250°C., dissolved in water, filtered, concentrated and crystallized.

Method of purification: Recrystallization.

Grades: Highest purity; pure fused; reagent; U. S. P.; technical.

Containers: Wooden kegs; glass bottles.

Uses: Manufacture of mordants, acetic ether, Schweinfurth green; filling foot-warmers, milk thermophores, etc.; reagent in analytical chemistry; separation of the opium alkaloids.

Fire hazard: None.

Railroad shipping regulations: None

Sodium Acid Carbonate. See Sodium bicarbonate.

Sodium Acid Chromate. See Sodium bichromate.

Sodium Acid Fluoride. See Sodium bifluoride.

Sodium Acid Phosphate. See Sodium phosphate, Monobasic.

Sodium Acid Sulfate. See Sodium bisulfate.

Sodium Acid Sulfite. See Sodium bisulfite.

Sodium Aluminate* $\text{Na}_2\text{Al}_2\text{O}_4$.

Color and properties: White powder.

Constants: Melting-point 1800°C.

Soluble in water; insoluble in alcohol. Derivation: By heating bauxite with sodium carbonate and extracting the sodium aluminate with water.

Grades: Technical.

Containers: Wooden kegs.

Uses: Mordant.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium-Aluminum Sulfate* (Soda alum, Porous alum)

$\text{Al}_2(\text{SO}_4)_3 \cdot \text{Na}_2\text{SO}_4 \cdot 24\text{H}_2\text{O}$.

Color and properties: Colorless crystals; saline, astringent taste; effloresces in air.

Constants: Specific gravity 1.675; melting-point 61°C.

Soluble in water; insoluble in alcohol.

Derivation: By heating a solution of aluminum sulfate from alum slates and adding sodium chloride. The solution is allowed to cool, with constant stirring. The alum meal deposited is washed with water and centrifuged.

Method of purification: Recrystallization.

Grades: Pure crystals; technical.

Containers: Wooden kegs.

Uses: Medicine; paper.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Amalgam* Na, Hg .

Color and properties: A silver-white, porous, crystalline mass, containing 2 to 10 per cent of metallic sodium.

Decomposes water.

Derivation: Mercury is heated to about 200°C. and sodium, in small pieces, added slowly.

Grades: 2 per cent, 3 per cent, 4 per cent, 5 per cent, 6 per cent, 7 per cent, 8 per cent, 9 per cent, 10 per cent alloy.

Containers: Glass bottles.

Uses: Preparation of hydrogen; reduction of metal halogen compounds and organic compounds; reagent in analytical chemistry.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Sodium Amide* (Sodamide), NaNH_2 .

Color and properties: White, crystalline powder.

Constants: Melting-point 155°C.; boiling-point 400°C.

Decomposes in water.

Derivation: Dry ammonia gas is passed over metallic sodium at 350°C.

Grades: Technical.

Containers: Wooden kegs.

Uses: Manufacture of sodium cyanide.

Fire hazard: None.

Railroad shipping regulations: Yellow label.

Sodium-aminobenzene Sulfonate, Para-. See Sodium sulfanilate.

Sodium-aminophenyl Arsonate. See Sodium arsanilate.

Sodium-aniline Arsonate. See Sodium arsanilate.

Sodium-aniline Sulfonate. See Sodium sulfanilate.

Sodium Arsanilate* (Atoxyl; Sodium-aniline arsonate; Soamin; Sodium-aminophenyl arsonate)
 $C_6H_4NH_2(AsO.OH.ONa)$.

Color and properties: White, crystalline, odorless powder; faint salty taste; poisonous.

Soluble in water.

Derivation: By dissolving arsanilic acid in sodium carbonate solution and crystallizing.

Method of purification: Recrystallization.

Grades: Technical; medicinal.

Containers: Tins; glass bottles.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Arsenate* $Na_3AsO_4 \cdot 12H_2O$.

Color and properties: Clear, colorless crystals; mild alkaline taste; poisonous.

Constants: Specific gravity 1.7593; melting-point $85.5^\circ C$.

Soluble in water; slightly soluble in alcohol; insoluble in ether.

Derivation: (a) Arsenic trioxide is heated with sodium nitrate, dissolved in water and crystallized.

(b) Arsenic trioxide is dissolved in sodium carbonate solution, sodium nitrate is added, the solution evaporated to dryness, the residue calcined, dissolved in water and crystallized.

Method of purification: Recrystallization.

Impurities: Sodium binarsenate.

Grades: Highest purity; pure crystals; pure dry; U. S. P.; B. P.; technical.

Containers: Wooden kegs.

Uses: Antiseptic; medicine; dyeing; making other arsenates.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Arsenite* (Sodium meta-arsenite) Na_2HASO_3 .

Color and properties: Grayish-white powder, which absorbs carbon dioxide from the air; poisonous.

Constants: Specific gravity 1.87.

Soluble in water.

Derivation: Arsenic trioxide is dissolved in a solution of sodium carbonate or hydroxide and boiled for some time.

Grades: Crude; pure.

Containers: Wooden kegs.

Uses: Manufacture of arsenical soap for taxidermists; antiseptic; dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Aurichloride. See Sodium-gold chloride.

Sodium Benzoate* $NaC_7H_5O_2$.

Color and properties: White, amorphous, crystalline or granular, odorless powder; sweetish, astringent taste.

Soluble in water and alcohol.

Derivation: Neutralized with sodium carbonate solution, the solution filtered, concentrated and allowed to crystallize.

Method of purification: Recrystallization.

Grades: Crude; pure; highest purity; U. S. P.; B. P.

Containers: Wooden kegs; tins.

Uses: Food preservative (its use for this purpose being limited by law in most countries); antiseptic; medicine; tobacco.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Benzosulfonide* (Soluble saccharine, Crystallose)

$NaCH_3CO.SO_2NH_2 \cdot 2H_2O$.

Color and properties: White, crystalline powder, very sweet taste.

Soluble in water, alcohol, ether and chloroform; insoluble in acids.

Derivation: By the action of sodium bicarbonate on saccharine.

Method of purification: Crystallization.

Impurities: Saccharin.

Grades: U. S. P.; 500.

Containers: Tins.

Uses: Sweetening compound; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Biborate. See Sodium borate.

Sodium Bicarbonate* (Baking soda; Sodium acid carbonate) NaHCO_3 .

Color and properties: White powder or crystalline lumps; cooling, slightly alkaline taste.

Constants: Specific gravity 2.20; melting-point: Loses carbon dioxide at 270°C .

Soluble in water; insoluble in alcohol.

Derivation: (a) By exposing sodium carbonate on gratings to carbon dioxide. (b) In the Solvay process by extraction with water and crystallization.

Method of purification: Recrystallization.

Impurities: Sulfuric acid; chlorine; silica; heavy metals; sodium thiosulfate; sodium carbonate; potassium salts; ammonium salts.

Grades: Commercial; pure; reagent; highest purity; U. S. P.; B. P.

Containers: Barrels; boxes.

Uses: Manufacture of effervescent salts and beverages, artificial mineral waters, baking powder; reagent in analytical chemistry; gold and platinum plating; tanning industry; treating wool and silk; fire extinguishers; medicine; prevention of timber mold.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Bichromate* (Sodium dichromate; Sodium acid chromate)

$\text{Na}_2\text{Cr}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$.

Color and properties: Red, deliquescent, crystalline fragments.

Constants: Specific gravity 2.52; melting-point: Loses $2\text{H}_2\text{O}$ at 100°C ;

boiling-point: Decomposes.

Soluble in water.

Derivation: Chrome iron ore is fused

in a reverberatory furnace, with lime and soda in presence of air, followed by extraction with water, and acidification with sulfuric acid. The solution is filtered, concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Iron salts.

Grades: Technical; C. P.

Containers: Wooden barrels.

Uses: Tanning; electroplating; dyeing; printing; bleaching oils, waxes and sponges; waterproofing fabrics; antiseptic; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Sodium Bifluoride* (Sodium acid fluoride) NaHF_2 .

Color and properties: White, crystalline powder; poisonous.

Soluble in water.

Grades: Technical.

Containers: Tins.

Uses: Food preservative; preservative for zoological and anatomical specimens; etching glass; antiseptic.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Biphosphate. See Sodium phosphate, Monobasic.

Sodium Bisulfate* (Sodium acid sulfate; Niter cake) NaHSO_4 .

Color and properties: Colorless crystals or white, fused lumps; aqueous solution is strongly acid.

Constants: Specific gravity 2.435; melting-point 300°C .

Soluble in water; decomposes in alcohol.

Derivation: A by-product in the manufacture of hydrochloric and nitric acids.

Method of purification: Recrystallization.

Impurities: Heavy metals; chlorides; arsenic; potassium bisulfate; sulfuric acid.

Grades: Pure crystals; pure fused; pure dry; reagent; crude.

Containers: Wooden kegs.

Uses: Flux for decomposing minerals; substitute for sulfuric acid in dyeing; disinfectant for potable water (anti-typhoid); dyeing; manufacture of sodium sulfate; liberating carbon dioxide in CO₂ baths; in thermophores.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Bisulfite* (Sodium acid sulfite; Leucogen) NaHSO₃.

Color and properties: White crystals or crystalline powder; slight sulfurous odor; disagreeable taste.

Constants: Specific gravity 1.48; melting-point: Decomposes.

Soluble in water; insoluble in alcohol.

Derivation: Sodium hydroxide solution is saturated with sulfur dioxide gas and the solution crystallized.

Method of purification: Recrystallization.

Grades: Crystals; pure dry; commercial dry; reagent; commercial solution: 33⅓ per cent.

Containers: Wooden barrels; carboys.

Uses: Disinfectant; bleaching; paper-making; dyeing; preservative for egg-yolk and syrups; preparation of aldehydes; antiseptic in medicine and in the fermentation industries.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Borate* (Borax; Sodium biborate) Na₂B₄O₇·10H₂O.

Color and properties: White crystals or powder.

Constants: Melting-point: Red-heat. Soluble in water and glycerine; insoluble in alcohol.

Derivation: Ulexite (NaCaB₅O₉·8H₂O) or Colemanite (Ca₂B₆O₅·5H₂O) is roasted at low heat in a rotary furnace. The powder is sifted and boiled with sodium carbonate and bicarbonate solution until decomposed, the calcium carbonate settles and the solution of borax is run into large tanks and crystallized.

Method of purification: Recrystallization.

Grades: Anhydrous; fused; refined; U. S. P.; C. P.; crude.

Containers: Barrels; kegs; cars.

Uses: Medicine; textiles; metallurgy; tanning; ceramics; food preservative.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Bromide*

(a) NaBr (b) NaBr·2H₂O.

Color and properties: White, crystalline powder or granules; saline and somewhat bitter taste; absorbs moisture from the air, becoming very hard. Keep well stoppered.

Constants: Specific gravity: (a) 3.203;

(b) 2.176. Melting-point: 757.7°C.

Boiling-point: (a) 1455°C.

Soluble in water; slightly soluble in alcohol.

Derivation: Ferroso-ferric bromide is dissolved in water, sodium carbonate added, the solution filtered and evaporated.

Method of purification: Recrystallization.

Grades: U. S. P.; B. P., commercial; pure; highest purity.

Containers: Glass bottles.

Uses: Photography; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Cacodylate* (Sodium dimethylarsenate) (CH₃)₂AsOONa·3H₂O.

Color and properties: White, amorphous powder; poisonous.

Soluble in water.

Derivation: By the interaction of sodium carbonate and cacodylic acid.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Carbolate. See Sodium phenate.

Sodium Carbonate* (Soda; Carbonic soda; Sal soda; Washing soda)

(a) Na₂CO₃ (b) Na₂CO₃·H₂O (c) Na₂CO₃·10H₂O.

Color and properties: Colorless crystals or white powder; strong alkaline taste; effloresces in air.

| | | | |
|------------------|------------|---------------------------------|---|
| Constants: | (a) | (b) | (c) |
| Specific gravity | 2.50 | ..... | 1.446 |
| Melting-point | 849°C | Loses H ₂ O at 100°C | Loses 5H ₂ O at 12.5°C and melts at 34°C 106°C |
| Boiling-point | Decomposes | ..... |  |

Soluble in water and glycerine; insoluble in alcohol.

Derivation: By dissolving soda ash in water, allowing the sediment to settle completely, decanting the clear solution, cooling and crystallizing.

Method of purification: Recrystallization.

Grades: Highest purity crystals; anhydrous, dry or fused; twice purified crystals or dry; commercial; reagent, crystalline, dry or anhydrous; U. S. P.; B. P. "Modified Sodas" or "neutral sodas" are all those forms of alkali containing more carbon dioxide than ordinary sodium carbonate or soda ash, and containing water of crystallization.

Uses: Glass manufacture; soap manufacture; bleaching and washing linen, cotton, wool, etc.; paper-making; photography; dyeing and printing fabrics; manufacture of dyes and other sodium salts; preventing the formation of boiler scale; reagent in analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Chlorate* NaClO₃.

Color and properties: Colorless, odorless crystals; cooling saline taste; must not be triturated with any combustible substance.

Constants: Specific gravity 2.490; melting-point 255°C.; boiling-point: Decomposes.

Soluble in water and alcohol.

Derivation: A concentrated alkaline solution of sodium chloride is heated and electrolyzed, the chlorate crystallizing out.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Iron barrels; glass bottles.

Uses: Medicine; oxidizing agent; substitute for potassium chlorate, being

more soluble in water; manufacture of matches and explosives.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Sodium Chloraurate. See Sodium-gold chloride.

Sodium Chloroaurate. See Sodium-gold chloride.

Sodium Chloride* (Table salt, Sea salt, Common salt, Rock salt) NaCl.

Color and properties: Colorless, transparent crystals or white, crystalline powder; occurs in nature as the mineral halite; somewhat hygroscopic.

Constants: Specific gravity 2.161; melting-point 804°C.; boiling-point 1490°C.

Soluble in water; very slightly soluble in alcohol; insoluble in concentrated hydrochloric acid.

Derivation: (a) By solution of rock salt in water, filtration, and crystallization. (b) By evaporation and crystallization of naturally occurring brines. (c) By evaporation of sea water by the heat of the sun, and crystallization.

Method of purification: Recrystallization.

Impurities: Sulfates; heavy metals; alkaline earths; magnesium salts; ammonium salts.

Grades: Highest purity medicinal, crystals; highest purity, dried; highest purity, fine powder; highest purity, fused; reagent; reagent, fused; table salt; rock salt; U. S. P.; B. P.; crude.

Containers: Barrels; bags; boxes; also shipped loose in cars.

Uses: Condiment; medicine; production of sodium light for polariscopic, spectroscopic and other similar work; reagent in analytical chemistry; food preservative; zinc metallurgy; sodium salts; sodium metal; chlorine, caustic soda.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Chromate* $\text{Na}_2\text{CrO}_4 \cdot 10\text{H}_2\text{O}$.

Color and properties: Yellow, translucent, efflorescent crystals.

Constants: Specific gravity 2.71; melting-point 19.92°C .

Soluble in water; slightly soluble in alcohol.

Derivation: Chrome iron ore is melted in a reverberatory furnace with lime and soda, in presence of air. The melt is dissolved in water, a small amount of sodium carbonate added, the solution decanted, acidified with acetic acid, concentrated and crystallized.

Method of purification: Recrystallization.

Grades: Pure neutral; highest purity; technical.

Containers: Wooden kegs.

Uses: Manufacture of inks; dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Citrate* $2\text{Na}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 11\text{H}_2\text{O}$.

Color and properties: White crystals or granular powder; pleasant acid taste.

Constants: Melting-point: Loses $11\text{H}_2\text{O}$ at 150°C ; boiling-point: Decomposes.

Soluble in water; slightly soluble in alcohol.

Derivation: Sodium sulfate solution is treated with calcium citrate, filtered, concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Calcium citrate; sodium sulfate.

Grades: Highest purity, medicinal; pure; commercial; U. S. P.

Containers: Wooden kegs; glass bottles.

Uses: Medicine; soft drinks.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium-Coerulein Sulfate. See Indigo carmine.**Sodium Cyanide*** NaCN .

Color and properties: White, deliquescent, crystalline powder; exceedingly poisonous.

Soluble in water; slightly soluble in alcohol.

Derivation: (a) Sodamide is produced from sodium and ammonia. The sodamide is heated with charcoal and the resultant soda cyanamide is then heated with an excess of charcoal resulting in the formation of sodium cyanide. (b) By the fusion of calcium cyanamide, common salt and a small amount of calcium carbide.

Method of purification: Recrystallization.

Impurities: Sodium cyanate; sodium carbonate.

Grades: Commercial; pure; highest purity; U. S. P.

Containers: Wooden kegs.

Uses: Extraction of gold and silver from ores; electroplating; heat treatment of metals; medicine; making hydrocyanic acid; insecticide.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Dichromate. See Sodium bichromate.**Sodium Dimethylarsenate.** See Sodium cacodylate.**Sodium Dioxide.** See Sodium peroxide.**Sodium Dithionate.** See Sodium hyposulfate.**Sodium Ferricyanide*** (Red prussiate of sodium) $\text{Na}_3\text{Fe}(\text{CN})_6 \cdot \text{H}_2\text{O}$.

Color and properties: Ruby-red, deliquescent crystals; poisonous.

Soluble in water; insoluble in alcohol.

Derivation: Chlorine is passed into sodium ferrocyanide solution, crystals of the ferricyanide separating out.

Method of purification: Recrystallization.

Impurities: Sodium ferrocyanide; sodium chloride.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Production of pigments; dyeing; printing.

Fire hazard: None.

Railroad shipping regulations: None.

| | | | |
|------------------|-----------------|--------------------------|---|
| Constants: | (a) | (b) | (c) |
| Specific gravity | 2.50 | ..... | 1.446 |
| Melting-point | 849°C | Loses H_2O at 100°C | Loses $5H_2O$ at 12.5°C and melts at 34°C 106°C |
| Boiling-point | Decom- poses | ..... |  |

Soluble in water and glycerine; insoluble in alcohol.

Derivation: By dissolving soda ash in water, allowing the sediment to settle completely, decanting the clear solution, cooling and crystallizing.

Method of purification: Recrystallization.

Grades: Highest purity crystals; anhydrous, dry or fused; twice purified crystals or dry; commercial; reagent, crystalline, dry or anhydrous; U. S. P.; B. P. "Modified Sodas" or "neutral sodas" are all those forms of alkali containing more carbon dioxide than ordinary sodium carbonate or soda ash, and containing water of crystallization.

Uses: Glass manufacture; soap manufacture; bleaching and washing linen, cotton, wool, etc.; paper-making; photography; dyeing and printing fabrics; manufacture of dyes and other sodium salts; preventing the formation of boiler scale; reagent in analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Chlorate* $NaClO_3$.

Color and properties: Colorless, odorless crystals; cooling saline taste; must not be triturated with any combustible substance.

Constants: Specific gravity 2.490; melting-point 255°C.; boiling-point: Decomposes.

Soluble in water and alcohol.

Derivation: A concentrated alkaline solution of sodium chloride is heated and electrolyzed, the chlorate crystallizing out.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Iron barrels; glass bottles.

Uses: Medicine; oxidizing agent; substitute for potassium chlorate, being

more soluble in water; manufacture of matches and explosives.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Sodium Chloraurate. See Sodium-gold chloride.

Sodium Chloroaurate. See Sodium-gold chloride.

Sodium Chloride* (Table salt, Sea salt, Common salt, Rock salt) $NaCl$.

Color and properties: Colorless, transparent crystals or white, crystalline powder; occurs in nature as the mineral halite; somewhat hygroscopic.

Constants: Specific gravity 2.161; melting-point 804°C.; boiling-point 1490°C.

Soluble in water; very slightly soluble in alcohol; insoluble in concentrated hydrochloric acid.

Derivation: (a) By solution of rock salt in water, filtration, and crystallization. (b) By evaporation and crystallization of naturally occurring brines. (c) By evaporation of sea water by the heat of the sun, and crystallization.

Method of purification: Recrystallization.

Impurities: Sulfates; heavy metals; alkaline earths; magnesium salts; ammonium salts.

Grades: Highest purity medicinal, crystals; highest purity, dried; highest purity, fine powder; highest purity, fused; reagent; reagent, fused; table salt; rock salt; U. S. P.; B. P.; crude.

Containers: Barrels; bags; boxes; also shipped loose in cars.

Uses: Condiment; medicine; production of sodium light for polariscopic, spectroscopic and other similar work; reagent in analytical chemistry; food preservative; zinc metallurgy; sodium salts; sodium metal; chlorine, caustic soda.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Chromate* $\text{Na}_2\text{CrO}_4 \cdot 10\text{H}_2\text{O}$.

Color and properties: Yellow, translucent, efflorescent crystals.

Constants: Specific gravity 2.71; melting-point 19.92°C .

Soluble in water; slightly soluble in alcohol.

Derivation: Chrome iron ore is melted in a reverberatory furnace with lime and soda, in presence of air. The melt is dissolved in water, a small amount of sodium carbonate added, the solution decanted, acidified with acetic acid, concentrated and crystallized.

Method of purification: Recrystallization.

Grades: Pure neutral; highest purity; technical.

Containers: Wooden kegs.

Uses: Manufacture of inks; dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Citrate* $2\text{Na}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 11\text{H}_2\text{O}$.

Color and properties: White crystals or granular powder; pleasant acid taste.

Constants: Melting-point: Loses $11\text{H}_2\text{O}$ at 150°C ; boiling-point: Decomposes.

Soluble in water; slightly soluble in alcohol.

Derivation: Sodium sulfate solution is treated with calcium citrate, filtered, concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Calcium citrate; sodium sulfate.

Grades: Highest purity, medicinal; pure; commercial; U. S. P.

Containers: Wooden kegs; glass bottles.

Uses: Medicine; soft drinks.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium-Coerulein Sulfate. See Indigo carmine.**Sodium Cyanide*** NaCN .

Color and properties: White, deliquescent, crystalline powder; exceedingly poisonous.

Soluble in water; slightly soluble in alcohol.

Derivation: (a) Sodamide is produced from sodium and ammonia. The sodamide is heated with charcoal and the resultant soda cyanamide is then heated with an excess of charcoal resulting in the formation of sodium cyanide. (b) By the fusion of calcium cyanamide, common salt and a small amount of calcium carbide.

Method of purification: Recrystallization.

Impurities: Sodium cyanate; sodium carbonate.

Grades: Commercial; pure; highest purity; U. S. P.

Containers: Wooden kegs.

Uses: Extraction of gold and silver from ores; electroplating; heat treatment of metals; medicine; making hydrocyanic acid; insecticide.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Dichromate. See Sodium bichromate.**Sodium Dimethylarsenate.** See Sodium cacodylate.**Sodium Dioxide.** See Sodium peroxide.**Sodium Dithionate.** See Sodium hyposulfate.**Sodium Ferricyanide*** (Red prussiate of sodium) $\text{Na}_3\text{Fe}(\text{CN})_6 \cdot \text{H}_2\text{O}$.

Color and properties: Ruby-red, deliquescent crystals; poisonous.

Soluble in water; insoluble in alcohol.

Derivation: Chlorine is passed into sodium ferrocyanide solution, crystals of the ferricyanide separating out.

Method of purification: Recrystallization.

Impurities: Sodium ferrocyanide; sodium chloride.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Production of pigments; dyeing; printing.

Fire hazard: None.

Railroad shipping regulations: None.

Containers: Glass bottles.
 Uses: Chemical reagent.
 Fire hazard: None.
 Railroad shipping regulations: None.

Sodium Hyposulfite. See Sodium thiosulfate.

Sodium Indigotindisulfonate. See Indigo carmine.

Sodium Iodide* (a) NaI (b) $\text{NaI} \cdot 2\text{H}_2\text{O}$.
 Color and properties: White cubical crystals or powder; saline, somewhat bitter taste.

Constants: Specific gravity: (a) 3.665; (b) 2.448. Melting-point: (a) 653°C .
 Boiling-point: (a) 1350°C .

Soluble in water and alcohol.

Derivation: Ferroso-ferric iodide, prepared from iron, iodine and water, is treated with pure sodium carbonate, filtered, the solution concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Sodium iodate.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Photography; solvent for iodine; reagent in analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Manganate* (a) Na_2MnO_4 ;

(b) $\text{Na}_2\text{MnO}_4 \cdot 4\text{H}_2\text{O}$;

(c) $\text{Na}_2\text{MnO}_4 \cdot 6\text{H}_2\text{O}$;

(d) $\text{Na}_2\text{MnO}_4 \cdot 10\text{H}_2\text{O}$.

Color and properties: Green crystals.

Constants: (d) Melting-point 17°C .

Soluble in cold water; decomposed by hot water.

Derivation: Manganese dioxide is fused with sodium hydroxide or carbonate in presence of sodium nitrate.

The mass is extracted with cold water, concentrated in a vacuum and crystallized.

Grades: Technical.

Containers: Wooden barrels; glass bottles.

Uses: Manufacture of permanganate.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Meta-arsenite. See Sodium arsenite.

Sodium Meta-bisulfite. See Sodium bisulfite.

Sodium Molybdate* $\text{Na}_2\text{MoO}_4 \cdot 2\text{H}_2\text{O}$.

Color and properties: Small, lustrous, crystalline plates.

Soluble in water.

Derivation: By the interaction of sodium hydroxide and molybdic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Reagent in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Monosulfide. See Sodium sulfide.

Sodium-Naphthalene Sulfonate*

$\text{C}_{10}\text{H}_7\text{SO}_3\text{Na}$.

Color and properties: Yellowish, crystalline plates.

Soluble in water.

Derivation: Naphthalene sulfonic acid is prepared by sulfonating naphthalene with sulfuric acid. The solution is treated with sodium carbonate filtered, concentrated and crystallized.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Organic preparations; naphthols.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Naphthionate* (Sodium naphthylamine sulfonate, Alpha-.)

$\text{NaC}_{10}\text{H}_6(\text{NH}_2)\text{SO}_3 \cdot 4\text{H}_2\text{O}$.

Color and properties: White crystals. Soluble in water.

Derivation: Alpha-naphthylamine is fused and poured into concentrated sulfuric acid, heated to 180°C ., then oxalic acid is added. The molten mass is poured on to lead plates and baked for 8 hours to 180°C . When cold, the porous mass is neutralized with hot caustic soda solution, filtered, concentrated and crystallized.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: For Riegler's reagent for nitrous acid.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium-Naphthylamine Sulfonate. See Sodium naphthionate.

Sodium Nitrate* (Soda niter, Cubic niter, Chili saltpeter, Soda saltpeter, Cubic saltpeter, Chili niter, Nitratine) NaNO_3 .

Color and properties: Colorless, transparent, odorless crystals; saline, slightly bitter taste.

Constants: Specific gravity 2.267; melting-point 316°C .; boiling-point: Decomposes.

Soluble in water and glycerine; slightly soluble in alcohol.

Derivation: By extraction of Chili saltpeter with water, filtration, concentration and crystallization.

Method of purification: Recrystallization.

Grades: Double refined crystals; double refined granulated; powder; fused powder; purified crystal; fused sticks; commercial; U. S. P.; B. P.

Containers: Bags; tins; glass bottles.

Uses: Manufacturing sulfuric and nitric acids and potassium nitrate; oxidizing agent; fertilizer; flux; glass manufacture; pyrotechnics; reagent in analytical chemistry; medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Sodium Nitrite* NaNO_2 .

Color and properties: Slightly yellowish or white crystals or touch sticks.

Constants: Specific gravity 2.157; melting-point 213°C .; boiling-point: Decomposes.

Soluble in water; slightly soluble in alcohol and ether.

Derivation: Sodium nitrate is fused in iron pans, lead added, a little at a time, the temperature being kept between 450° and 500°C . The fused

mass is poured into water, neutralized with dilute acid (sulfuric or nitric) and filtered. The solution is concentrated in open pans to about 40°Be and crystallized.

Method of purification: Recrystallization.

Impurities: Potassium salts; chlorine; heavy metals; sulfates.

Grades: Commercial; reagent, sticks; highest purity, sticks; reagent, free from potassium.

Containers: Wooden kegs.

Uses: Dyestuff manufacture, for diazotizing; organic synthesis; preparation of nitric oxide; reagent in analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: Yellow label.

Sodium Nitroprussiate. See Sodium nitroprusside.

Sodium Nitroprusside* (Sodium nitroprussiate) $\text{Na}_2\text{Fe}(\text{CN})_5\text{NO}\cdot 2\text{H}_2\text{O}$.

Color and properties: Ruby-red, transparent crystals.

Constants: Specific gravity 1.6803.

Soluble in water.

Derivation: Sodium ferrocyanide solution is treated with nitric acid, whereupon nitroprusside crystals separate.

Method of purification: Recrystallization.

Impurities: Sulfates.

Grades: Technical; crystals; reagent.

Containers: Glass bottles.

Uses: Testing silk for presence of animal hair; in Roussin's photometer; reagent in analytical chemistry for sulfur or sulfides and acetone.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Ortho-phosphate. See Sodium phosphate, Tribasic.

Sodium Ortho-vanadate. Sodium vanadate.

Sodium Oxalate* $\text{Na}_2\text{C}_2\text{O}_4$.

Color and properties: White, crystalline powder; poisonous.

Soluble in water.

Derivation: Oxalic acid is dissolved in water, neutralized with sodium carbonate, the solution filtered, concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Sodium carbonate; sodium binoxalate; chlorine; sulfates; iron salts; potassium salts; organic impurities.

Grades: Commercial; reagent; highest purity; pure.

Containers: Wooden kegs.

Uses: Reagent in analytical chemistry; textile industry.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Perborate* (Perborin)

(a) $\text{NaBO}_3 \cdot \text{H}_2\text{O}$ (b) $\text{NaBO}_3 \cdot 4\text{H}_2\text{O}$.

Color and properties: White crystals.

Constants: Melting-point: Decomposes at 40°C .

Soluble in alkalis, glycerine and water.

Derivation: (a) Solutions of borax, sodium peroxide and hydrogen peroxide are mixed, heated slightly and allowed to crystallize. (b) Boric acid and sodium peroxide are mixed and poured into cold, acidified water. The crystals of perborate deposit, are filtered out, and dried at 50°C .

Method of purification: Recrystallization.

Grades: Technical; U. S. P.

Uses: Manufacture of hydrogen peroxide; antiseptic; deodorant; bactericide; bleaching; oxidizing agent; toilet preparations.

Containers: Wooden kegs.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Perchlorate* NaClO_4 .

Color and properties: Colorless, deliquescent crystals. Must not be triturated with organic or combustible substances, may cause explosions.

Constants: Melting-point 482°C .; boiling-point: Decomposes.

Soluble in water and alcohol.

Derivation: (a) Sodium chlorate and sodium chloride are mixed and heated until fused. The unchanged chloride is leached out. (b) A cold solution

of sodium chlorate is electrolyzed, the solution concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Sodium chloride; sodium chlorate.

Grades: Technical.

Containers: Iron canisters; glass bottles.

Uses: Explosives.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Sodium Permanganate* (Conde's liquid)

$\text{NaMnO}_4 \cdot 3\text{H}_2\text{O}$.

Color and properties: Purple to reddish black crystals or powder.

Constants: Melting-point: Decomposes.

Soluble in water.

Derivation: Sodium manganate is dissolved in water and a current of chlorine, carbon dioxide or ozone passed in. The solution is concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Sodium hydroxide; sodium manganate.

Grades: Technical; sold commercially in solution.

Containers: Wooden barrels.

Uses: Oxidizing agent; disinfectant; bactericide; manufacture of saccharine; antidote for poisoning by morphine, curare and phosphorus.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Sodium Peroxide* (Sodium dioxide; Sodium superoxide; Sodium binoxide; Oxone) Na_2O_2 .

Color and properties: Yellowish-white powder, turning yellow when heated. Keep away from alcohol and other similar inflammable liquids, as it will cause ignition, particularly in presence of water.

Constants: Specific gravity 2.805; melting-point: Decomposes.

Soluble in cold water, developing great heat; decomposed by hot water.

Derivation: Metallic sodium is heated

to 300°C. in aluminum trays in a re-tort in a current of dry air, from which the carbon dioxide has been removed.

Grades: Technical.

Containers: Tins.

Uses: Bleaching; oxidizing agent; reagent in analytical chemistry, purifying air in sick rooms, diving bells, etc.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Sodium Phenate* (Sodium phenolate; Sodium carbolate) $\text{NaC}_6\text{H}_4\text{OH}$.

Color and properties: White, deliquescent crystals. Keep well stoppered. Soluble in water and alcohol.

Derivation: Phenol is dissolved in caustic soda solution, concentrated and crystallized.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Antiseptic; in military gas-masks with charcoal and hexamethylenetetramine as absorbent for phosgene; salicylic acid; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Phenolate. See Sodium phenate.

Sodium Phenoneacetate. See Guacetin.

Sodium Phosphate, Dibasic* (Disodium phosphate; Hydrodisodic phosphate; Disodium ortho-phosphate) $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$.

Color and properties: Colorless, translucent crystals or white powder; cooling, saline taste.

Constants: Specific gravity 1.5235; melting-point 35°C.; boiling-point: Loses $12\text{H}_2\text{O}$ at 100°C.

Soluble in water; insoluble in alcohol.

Derivation: (a) The calcium is precipitated from dicalcium phosphate solution by sodium carbonate. (b) Bone-ash or phosphorite is digested with dilute sulfuric acid, the solution filtered off and concentrated, refiltered, diluted, and the calcium precipitated

with sodium carbonate. After filtration the solution is concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Arsenic; heavy metals; sulfates; nitrates; potassium salts.

Grades: Pure granular; twice purified, dried or crystal; highest purity; medicinal, crystal or dried; reagent; U. S. P.; B. P.

Containers: Wooden kegs; glass bottles.

Uses: Medicine; reagent in analytical chemistry; baking powders.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Phosphate, Monobasic* (Sodium acid phosphate; Monosodium phosphate; Monosodium ortho-phosphate; Sodium biphosphate) $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$.

Color and properties: Large, transparent crystals; acid reaction.

Constants: Specific gravity 2.040; melting-point: Loses $2\text{H}_2\text{O}$ at 200°C.

Soluble in water; insoluble in alcohol.

Derivation: By boiling disodium phosphate with nitric acid.

Method of purification: Recrystallization.

Grades: Technical; pure; U. S. P.; B. P.

Containers: Wooden kegs; glass bottles.

Uses: Medicine; baking powders.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Phosphate, Pyro*

$\text{Na}_4\text{P}_2\text{O}_7 \cdot 6\text{H}_2\text{O}$.

Color and properties: Colorless, transparent crystals.

Constants: Specific gravity 1.824; melting-point: The anhydrous salt melts at 970°C.

Soluble in water; insoluble in alcohol.

Derivation: By fusing disodium phosphate

Method of purification: Crystallization.

Impurities: Disodium ortho-phosphate.

Grades: Pure crystal; pure dried; fused; reagent.

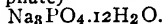
Containers: Wooden barrels.

Uses: Electroanalysis of metals; manufacture of iron pyrophosphate.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Phosphate, Tribasic* (Sodium ortho-phosphate; Trisodium phosphate)



Color and properties: Colorless crystals.

Constants: Specific gravity 1.618-1.645; melting-point 77°C .; boiling-point: Loses $11\text{H}_2\text{O}$ at 100°C .

Soluble in water.

Derivation: By saturation of phosphoric acid with sodium hydroxide and crystallization.

Method of purification: Recrystallization.

Grades: Commercial; highest purity.

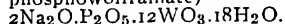
Containers: Wooden kegs; glass bottles.

Uses: Water softening boiler compound; water softening and soap substitute in the laundry industry; tanning industry; sugar purification.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Phosphotungstate* (Sodium phosphowolframate)



Color and properties: White, granular powder.

Soluble in water.

Derivation: By neutralizing phosphotungstic acid with sodium carbonate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Reagent for detecting and determining alkaloids.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Phosphowolframate. See Sodium phosphotungstate.

Sodium-Potassium Tartrate. See Potassium-sodium tartrate.

Sodium Prussiate, Red. See Sodium ferricyanide.

Sodium Prussiate, Yellow. See Sodium ferrocyanide.

Sodium-Pyrocatechin Monoacetate. See Guaiacetin.

Sodium Pyrophosphate. See Sodium phosphate, Pyro.

Sodium Rhodanate. See Sodium sulfo-cyanide.

Sodium Rhodanide. See sodium sulfocyanide.

Sodium Salicylate $\text{NaC}_7\text{H}_5\text{O}_3$.

Color and properties: Lustrous, white, crystalline scales or powder; sweetish, saline taste. The salt prepared from natural salicylic acid has a faint, aromatic odor.

Soluble in water.

Derivation: By heating sodium phenate in an autoclave with carbon dioxide, dissolving and crystallizing.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden kegs.

Uses: Medicine; production of salicylic acid.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Selenite* Na_2SeO_3 .

Color and properties: White crystals.

Soluble in water; insoluble in alcohol.

Derivation: By neutralizing selenious acid with sodium carbonate and crystallizing.

Method of purification: Recrystallization.

Grades: Commercial; highest purity.

Containers: Glass bottles; wooden kegs.

Uses: Glass manufacture; reagent in bacteriology.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Sesquicarbonate*



Color and properties: White crystals.

Constants: Specific gravity 2.112; melting-point: Decomposes.

Soluble in water.

Derivation: By boiling sodium carbonate solution, to remove carbon dioxide, the sesquicarbonate remaining, which, on cooling the solution, crystallizes out.

Method of purification: Recrystallizing.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Silicate* (Soluble glass; Water glass) (a) Na_2SiO_3 (b) $\text{NaSiO}_3 \cdot 9\text{H}_2\text{O}$ (c) $\text{Na}_2\text{Si}_4\text{O}_9$.

Color and properties: (Water glass) White to gray-white lumps or powder.

| | | |
|---------------|----------------------|--|
| Constants: | (a) | (b) |
| Melting-point | 1018°C | 48°C |
| Boiling-point | ..... | Loses $61\frac{1}{2}\%$ at 100°C |

Soluble in water and alkalis; insoluble in alcohol and acids.

Derivation: Silica (quartz), calcined soda and powdered coal are heated together in a crucible, the molten mass is powdered when cold, is extracted with water and steam in an autoclave, followed by evaporation of the water.

Method of purification: Fusion and passing in a current of air.

Impurities: Sodium sulfide; iron.

Grades: Pure crystal; crude lumps or powder; also marketed in form of solutions of various concentrations ranging from viscous semi-liquids to thin watery fluids.

Containers: Wooden barrels: Tins; glass bottles.

Uses: Fireproofing fabrics; manufacture of corrugated paperboard, mailing tubes, veneer products, etc.; greaseproofing paper containers, etc.; manufacture of cements; concrete hardeners, etc., manufacture of paints; filling for soap; cementing stones; waterproofing walls; in hydraulic and acid-proof mortars; dyeing and bleaching; cottonseed oil refining; cementing pipe insulation; preservative for eggs; in medicine for fastening splints; manufacture of abrasive wheels, stones, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Silicofluoride* (Sodium fluosilicate; Salufer) Na_2SiF_6 .

Color and properties: White, odorless, tasteless, granular powder.

Constants: Specific gravity 2.755; melting-point: Decomposes at red heat.

Very slightly soluble in cold water; insoluble in alcohol.

Derivation: By neutralization of fluosilicic acid with sodium carbonate.

Grades: Technical.

Containers: Glass bottles; wooden kegs.

Uses: Medicine; ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Stannate* ("Preparing salt")

$\text{Na}_2\text{SnO}_3 \cdot 3\text{H}_2\text{O}$.

Color and properties: White powder or lumps.

Soluble in water; insoluble in alcohol.

Derivation: (a) By fusion of meta-stannic acid and sodium hydroxide.

(b) By boiling tin scrap and sodium plumbate solution.

Grades: Technical.

Containers: Wooden barrels.

Uses: Mordant in dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Subsulfite. See Sodium thiosulfate.

Sodium Sulfanilate* (Sodium-aniline sulfonate; Sodium para-aminobenzene sulfonate) $\text{NaC}_6\text{H}_4(\text{NH}_2)\text{SO}_3 \cdot 2\text{H}_2\text{O}$.

Color and properties: White, lustrous, crystalline leaflets.

Soluble in water.

Derivation: Sulfanilic acid is dissolved in a solution of sodium hydroxide or carbonate, concentrated and crystallized.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Sulfate* (Glauber's salt) (a) Na_2SO_4 (b) $\text{Na}_2\text{SO}_4 \cdot 7\text{H}_2\text{O}$ (c) $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$.

Constants: (a) (b)
Specific gravity 2.671 1.492
Melting-point 888°C 82.38°C

Soluble in water; insoluble in alcohol. Derivation: By heating sodium chloride in a furnace with sulfuric acid, in the manufacture of hydrochloric acid, the sulfate being a by-product.

Method of purification: Recrystallization.

Grades: Highest purity, crystal and granular; highest purity, medicinal dried; pure dried; commercial; reagent, crystal; U. S. P.; B. P.

Containers: Wooden barrels.

Uses: Manufacture of sodium carbonate, glass and ultramarine; dyeing; freezing mixtures; reagent in analytical chemistry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Sulfide* (Sodium sulfuret; Sodium monosulfide) Na_2S .

Color and properties: Yellow or brick-red lumps.

Constants: Specific gravity 1.836.

Soluble in water; slightly soluble in alcohol; insoluble in ether.

Derivation: By heating sodium acid sulfate with salt and coal to above 950°C.; extraction with water and crystallization.

Method of purification: Recrystallization.

Impurities: Ammonium salts; sodium sulfite; ferrous sulfide.

Grades: Crystal; crystal, free from sulfite; pure, fused; fused, reagent, crystal.

Containers: Crystals: Wooden barrels; fused: Iron drums.

Uses: Reagent in analytical chemistry; photography; denitrating artificial silk; dyeing; insecticide; depilatory in tanning; manufacture of sulfur dyes.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Sodium Sulfite* (a) Na_2SO_3

(b) $\text{Na}_2\text{SO}_3 \cdot 7\text{H}_2\text{O}$.

Color and properties: White crystals or powder; saline, sulfurous taste.

Constants: Specific gravity: (a) 2.6334; (b) 1.5939. Melting-point: (a)

150°C.; (b) Loses $7\text{H}_2\text{O}$ at 150°C. Boiling-point: (a) Decomposes; (b) Decomposes.

Soluble in water; insoluble in alcohol. Derivation: Large sodium carbonate crystals are placed in a lead-lined vat on a perforated false bottom, a current of sulfur dioxide is passed up through the crystals, a solution of sodium disulfite collecting at the bottom of the vat. This is saturated with sodium carbonate, concentrated and allowed to crystallize.

Method of purification: Recrystallization.

Impurities: Heavy metals; arsenic.

Grades: Pure, crystal or dried; reagent, crystal or dried; commercial; B. P.

Containers: Wooden kegs.

Uses: Photography; preservative; antiseptic; reducing agent; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Sulfhydrate: See Sodium hydrosulfide.

Sodium Sulfocyanate. See Sodium sulfocyanide.

Sodium Sulfocyanide* (Sodium sulfocyanate, Sodium rhodanate, Sodium rhodanide) NaCNS .

Color and properties: Colorless, deliquescent crystals or white powder; poisonous.

Constants: Melting-point 287°C.

Soluble in water and alcohol.

Derivation: By boiling sodium cyanide with sulfur.

Method of purification: Crystallization.

Grades: Technical; pure, crystal or dried.

Containers: Glass bottles.

Uses: Reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Superoxide. See Sodium peroxide.

Sodium Tartrate* $\text{Na}_2\text{C}_4\text{H}_4\text{O}_6 \cdot 2\text{H}_2\text{O}$.

Color and properties: White crystals.

Constants: Specific gravity 1.794.

Method of purification: Recrystallizing.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Silicate* (Soluble glass; Water glass) (a) Na_2SiO_3 (b) $\text{NaSiO}_3 \cdot 9\text{H}_2\text{O}$ (c) $\text{Na}_2\text{Si}_4\text{O}_9$.

Color and properties: (Water glass) White to gray-white lumps or powder.

| | | |
|---------------|----------------------|--|
| Constants: | (a) | (b) |
| Melting-point | 1018°C | 48°C |
| Boiling-point | ..... | Loses $61\frac{1}{2}\%$ at 100°C |

Soluble in water and alkalis; insoluble in alcohol and acids.

Derivation: Silica (quartz), calcined soda and powdered coal are heated together in a crucible, the molten mass is powdered when cold, is extracted with water and steam in an autoclave, followed by evaporation of the water.

Method of purification: Fusion and passing in a current of air.

Impurities: Sodium sulfide; iron.

Grades: Pure crystal; crude lumps or powder; also marketed in form of solutions of various concentrations ranging from viscous semi-liquids to thin watery fluids.

Containers: Wooden barrels: Tins; glass bottles.

Uses: Fireproofing fabrics; manufacture of corrugated paperboard, mailing tubes, veneer products, etc.; greaseproofing paper containers, etc.; manufacture of cements; concrete hardeners, etc., manufacture of paints; filling for soap; cementing stones; waterproofing walls; in hydraulic and acid-proof mortars; dyeing and bleaching; cottonseed oil refining; cementing pipe insulation; preservative for eggs; in medicine for fastening splints; manufacture of abrasive wheels, stones, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Silicofluoride* (Sodium fluosilicate; Salufer) Na_2SiF_6 .

Color and properties: White, odorless, tasteless, granular powder.

Constants: Specific gravity 2.755; melting-point: Decomposes at red heat.

Very slightly soluble in cold water; insoluble in alcohol.

Derivation: By neutralization of fluosilicic acid with sodium carbonate.

Grades: Technical.

Containers: Glass bottles; wooden kegs.

Uses: Medicine; ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Stannate* ("Preparing salt")

$\text{Na}_2\text{SnO}_3 \cdot 3\text{H}_2\text{O}$.

Color and properties: White powder or lumps.

Soluble in water; insoluble in alcohol.

Derivation: (a) By fusion of meta-stannic acid and sodium hydroxide.

(b) By boiling tin scrap and sodium plumbate solution.

Grades: Technical.

Containers: Wooden barrels.

Uses: Mordant in dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Subsulfite. See Sodium thiosulfate.

Sodium Sulfanilate* (Sodium-aniline sulfonate; Sodium para-aminobenzene sulfonate) $\text{NaC}_6\text{H}_4(\text{NH}_2)\text{SO}_3 \cdot 2\text{H}_2\text{O}$.

Color and properties: White, lustrous, crystalline leaflets.

Soluble in water.

Derivation: Sulfanilic acid is dissolved in a solution of sodium hydroxide or carbonate, concentrated and crystallized.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sodium Sulfate* (Glauber's salt) (a) Na_2SO_4 (b) $\text{Na}_2\text{SO}_4 \cdot 7\text{H}_2\text{O}$ (c) $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$.

Sodium Wolframate. See Sodium tungstate.

"Soilime."* A lime residue from cyanamide, containing 50 per cent of calcium oxide on a dry basis, one-third in the form of calcium hydroxide and two-thirds as the carbonate.

Soja-bean Oil. See Soya-bean oil

Solar Oil. See Kerosene.

Solder.* An alloy consisting of two or more metals, having a melting-point below that of any of the constituent metals, and used for joining certain other metals together by filling a joint or covering the juncture, as distinguished from brazing, welding, etc. Ordinary solder is an alloy of equal parts of lead and tin, and melts at about 188°C. Zinc solder consists of three parts of lead and five of tin, and melts at 176°C. Solder for brass or copper contains two parts of lead and five of tin, and melts at 170°C. Gold solder consists of: gold, 10 parts; silver, 6 parts; copper, 4 parts. Soft solder consists of one-third lead and two-thirds tin, and melts at about 170°C. Solders of melting-points down to 95°C. are made of lead, tin and bismuth.

Soldering Acid. See Acid hydrochloric.

Soluble Blue. Soluble Prussian blue. Not to be confused with coal-tar dyes of similar name.

Soluble Glass. See Sodium silicate.

Soluble Indigo. See Indigo carmine.

Soluble Saccharin. See Sodium benzo-sulfimide.

Soluble Starch. See Starch, Soluble.

Solvent Naphtha. See Naphtha, Solvent.

Sorel Cement.* A mixture of caustic, calcined magnesite, magnesium chloride, asbestos, wood-fiber, marble dust

or other inert filler, with or without linseed oil.

Uses: Sanitary floors; boards (wood substitute); etc.

Sorrel Salt. See Potassium binoxalate.

Soy Oil. See Soya-bean oil.

Soya-bean Oil* (Soja-bean oil; Bean oil; Chinese bean oil).

Color and properties: Pale yellow, fixed oil.

Constants:

| | |
|----------------------|---------------|
| Specific gravity | 0.924-0.929 |
| Melting-point | 22°-31°C |
| Refractive index | 1.4760-1.4775 |
| Solidifying point | -15° to -8°C |
| Hehner value | 94-96 |
| Saponification value | 190-200 |
| Iodine value | 121-139 |

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: Soya-beans (*Soja hispida*, *S. japonica* or *Phaseolus hispida*) are crushed, packed into jute bags, heated over jets of steam and pressed. Solvent extraction is now extensively used both alone and after pressing.

Method of purification: Oil to be used for edible purposes is bleached with fuller's earth; oil for technical use is purified with chemicals.

Grades: Coast; refined; crude. Soya-bean oil is frequently quoted on f.a.q. (meaning "fair average quality") and mentioning the district from which the oil is obtained. This is a very loose method of grading and is being abandoned in favor of chemically controlled specifications, established by such bodies as the New York Produce Exchange.

Containers: Wooden barrels.

Uses: Soap manufacture; illumination; foods (this oil has always been one of the chief articles of diet in China, Japan, etc.); paints; varnishes.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Soudan Coffee. See Cola.

Spanish Fly. See Cantharides.

Spanish Grass. See Esparto.

Spanish Saffron. See Crocus.

Spanish Soapwort. See Gypsophila.

Spanish White. See Bismuth subnitrate.

Sparteinae Sulfas, U. S. P. See Spar-teine.

Sparteine* $C_{15}H_{26}N_2$.

Color and properties: Yellowish, thick, oily, liquid alkaloid; bitter taste; distinctive peculiar odor; usually used in the form of the sulfate, hydriodide, hydrochloride and triiodide; poisonous.

Constants: Boiling-point 180° - 181° C. Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By extraction of the tops of Spartium scoparium (broom) with alcohol and evaporation of the latter.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Spathic Iron Ore. See Siderite.

Spearmint Oil.*

Color and properties: Colorless to pale yellowish liquid; characteristic odor.

Chief known constituents: Carvone; phellandrene; pinene.

Constants: Specific gravity 0.930-0.940; optical rotation -43° .

Soluble in alcohol, ether and chloroform.

Derivation: By distillation of the leaves of *Mentha viridis*.

Method of purification: Rectification.

Grades: Technical.

Containers: Tins; glass bottles; copper flasks.

Uses: Flavoring; medicine; confectionery.

Fire hazard: None.

Railroad shipping regulations: None.

Spermaceti* (Cetaceum).

Color and properties: Pearly-white, unctuous, semi-transparent, concrete,

fatty substance; almost odorless and tasteless; becomes rancid on exposure.

Chief constituents: Cetin, esters of laurinic, stearic and myristic acids.

Constants: Specific gravity 0.945.

Soluble in ether, chloroform, carbon bisulfide and hot alcohol; insoluble in water and cold alcohol.

Derivation: Found in the head of the sperm-whale or floating in the ocean; is filtered under pressure to remove stearin, boiled with water and a small amount of caustic soda, followed by repeated washing with water.

Grades: Technical.

Containers: Wooden barrels.

Uses: Base for ointments, cerates and emulsions; manufacture of candles, soaps, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Specular Iron. See Hematite.

Sperm Oil. See Whale oil.

Sperrylite. A Wyoming mineral consisting of platinum arsenide, $PtAs_2$, also containing antimony and rhodium.

Spessartite. See Garnet.

Sphalerite (Blende; Blackjack; Jack; Rosinjack; Zinc blende). The commonest zinc mineral and ore, zinc sulfide, ZnS , crystallizing in isomorphous forms, and containing 67 per cent of zinc. Very widely distributed. See also Wurtzite.

Spiegeleisen. See Ferromanganese.

Spigelia* (Pinkroot; Indian pink; Carolina pink; Maryland pink; Wormgrass).

Derivation: Dried rhizome and roots of *Spigelia marilandica*.

Habitat: North America.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Spikenard.*

Derivation: Root of *Aralia racemosa*.
Habitat: Northeastern United States.
Grades: Technical.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Spindle Tree. See *Euonymus*.

Spinel. Native magnesium aluminate, when typical having the formula, $MgO \cdot Al_2O_3$, but the magnesium is often in part replaced by ferrous iron or manganese and the aluminum by ferric iron or chromium. Spinel of various colors is found in California, Colorado, Massachusetts, Montana, New York and North Carolina. It is used as an abrasive, also as a gem-stone.

Spirit of Ammonia* (Spirit of hartshorn).

Color and properties: Colorless, inflammable liquid; suffocating odor of ammonia; contains 10 per cent of ammonia gas (by weight). Keep well stoppered.

Constants: Specific gravity 0.810.

Soluble in water and alcohol.

Derivation: By absorbing ammonia in alcohol.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; pharmacy.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Spirit of Hartshorn. See Spirit of ammonia.

Spirit, Potato. See Amyl alcohol, Fermentation.

Spirits. See Ethyl alcohol.

Spirits, Cologne. See Ethyl alcohol.

Spirits, Columbian. See Methyl alcohol.

Spirits, Columbian. See Methyl alcohol.

Spirits of Wine. See Ethyl alcohol.

Spiritus Ætheris, U. S. P., B. P. Spirit of ether.

Spiritus Ætheris Nitrosi, U. S. P., B. P. Spirit of nitrous ether.

Spiritus Ammoniaë Aromaticus, U. S. P., B. P. Aromatic spirits of ammonia.

Spiritus Ammoniaë Fetidus, B. P. Fetid spirit of ammonia.

Spiritus Amygdalæ Amaræ, U. S. P. Spirit of bitter almond.

Spiritus Anisi, U. S. P., B. P. Spirit of anise.

Spiritus Armoraciaë Compositus, B. P. Compound spirit of horse-radish.

Spiritus Aurantii Compositus, U. S. P. Compound spirit of orange.

Spiritus Cajuputi, B. P. Spirit of cajuput.

Spiritus Camphoræ, U. S. P., B. P. Spirit of camphor.

Spiritus Chloroformi, U. S. P., B. P. Spirit of chloroform.

Spiritus Cinnamoni, U. S. P., B. P. Spirit of cinnamon.

Spiritus Glycerylis Nitratis, U. S. P. Spirit of nitroglycerine.

Spiritus Juniperi, U. S. P., B. P. Spirit of juniper.

Spiritus Juniperi Compositus, U. S. P. Compound spirit of juniper.

Spiritus Lavandulæ, U. S. P., B. P. Spirit of lavender.

Spiritus Menthaë Piperitæ U. S. P., B. P. Spirit of peppermint.

Spiritus Menthae Viridis, U. S. P. Spirit of spearmint.

Spiritus Myristicae, B. P. Spirit of nutmeg.

Spiritus Rectificatus, B. P. Sec. ethyl alcohol.

Spiritus Rosmarini, B. P. Spirit of Rosemary.

Spodumene. The principal native source of lithium, a lithium-aluminum silicate, $\text{Li}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2$, containing 8 per cent of lithium. When transparent and green in color, it is known as hiddenite and when pink or lilac in color as kunzite, both of which are used as gems. Occurs in California, Connecticut, North Carolina and South Dakota.

Sponge, Platinum. See Platinum black.

Spotted Cowbane. See Conium.

Spotted Hemlock. See Conium.

Spruce Oil.*

Color and properties: Colorless liquid; characteristic, agreeable odor.

Chief known constituents: Pinene, cadinene and bornyl acetate.

Constants: Specific gravity 0.905-0.910; optical rotation -22° to -25° .

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: By distillation from the leaves and twigs of *Picea alba* or *Picea nigra*.

Method of purification: Rectification.

Grades: Technical.

Containers: Iron drums; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Spruce Sulfite Extract.*

Derivation: A by-product in the paper industry.

Grades: 25 per cent Tannin; 50 per cent total solids.

Containers: Tank cars; wooden barrels.

Uses: Tanning industry; core binder in foundries; road binder.

Fire hazard: None.

Railroad shipping regulations: None.

Spurge Flax. See Mezereum.

Spurred Rye. See Ergot.

Squaw Bush. See *Viburnum opulus*.

Squaw Mint. See Hedeoma.

Squaw Root. See *Caulophyllum*.

Squill (*Scilla*; Sea onion).

Derivation: Bulb of *Urginea maritima*, deprived of its dry, membranous, outer scales, cut into thin slices and carefully dried.

Habitat: Mediterranean basin near the sea (Spain, France, Italy, Morocco and Algeria).

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Stagbush. See *Viburnum prunifolium*.

Stannic Acid. See Acid stannic.

Stannic Anhydride* (Stannic oxide; Tin peroxide; Tin dioxide; Flowers of tin; Tin-stone; Tin ash) SnO_2 .

Color and properties: (a) White, amorphous powder. (b) White crystals.

Constants:

| | | |
|------------------|-------------|--------------|
| Specific gravity | (a) 6.6-6.9 | (b) 6.7-6.85 |
| Melting-point | 1127°C | Infusible |

Soluble in concentrated sulfuric acid and fused alkalis; insoluble in water.

Derivation: (a) Found in nature as the mineral cassiterite; (b) Tin is melted and heated in air. (c) Tin ash, resulting from the oxidation of the baths of molten tin used in making tin plate, is refined.

Grades: White, pure; white; gray.

Containers: Wooden kegs.

Uses: Polishing powder for steel, glass etc., manufacture of milk-glass, ala-

baster glass, enamel and opaque glass.

Fire hazard: None.

Railroad shipping regulations: None.

Stannic Chloride* (Tin chloride; Tin tetrachloride; sometimes erroneously called Tin bichloride) SnCl_4 .

Color and properties: Colorless, fuming, caustic liquid, which water converts into the crystalline butter of tin, $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$. Keep well stoppered.

Constants: Specific gravity 2.2788; melting-point -33°C ; boiling-point 114°C .

Soluble in cold water; alcohol, carbon bisulfide and oil of turpentine; decomposed by hot water.

Derivation: (a) Treatment of tin or stannous chloride with chlorine. (b) Tin is dissolved in concentrated hydrochloric acid, neutralized with soda, heated with concentrated hydrochloric acid and sodium chlorate.

Grades: Technical.

Containers: Glass bottles; iron drums

Uses: Mordant in dyeing; tinning vessels; manufacture of fuchsine; weighting silk.

Fire hazard: None.

Railroad shipping regulations: White label.

Stannic Chromate* (Tin chromate)

$\text{Sn}(\text{CrO}_4)_2$.

Color and properties: Brownish-yellow, crystalline powder.

Soluble in water.

Derivation: By the action of chromic acid on stannic hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Decorating porcelain.

Fire hazard: None.

Railroad shipping regulations: None.

Stannic Oxide. See Stannic anhydride.

Stannic Phosphide* (Tin phosphide)

Sn_2P_2 .

Color and properties: Silver-white, hard mass or lumps.

Constants: Specific gravity 6.56.

Soluble in acids.

Derivation: By heating tin and phosphorus.

Grades: Technical.

Containers: Iron drums.

Uses: Manufacture of phosphor-bronze.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Stannic Sulfide* (Artificial gold; Mosaic gold) SnS_2 .

Color and properties: Yellow, amorphous mass or scales.

Constants: Specific gravity 4.42-4.60; melting-point: Decomposes at red-heat.

Soluble in concentrated hydrochloric acid and alkaline sulfides; insoluble in water.

Derivation: (a) By the action of sulfide on a solution of stannic chloride. (b) By heating tin amalgam with sulfur and ammonium chloride, distilling off the mercury sulfide and ammonium chloride.

Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Imitation gilding.

Fire hazard: None.

Railroad shipping regulations: None.

Stannous Chloride* (Tin chloride; Tin salt; Tin dichloride; Tin protochloride) (a) SnCl_2 . (b) $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: White, crystalline mass, which absorbs oxygen from the air, being converted into the insoluble oxychloride.

| Constants: | (a) | (b) |
|------------------|---------------------------------------|----------------------|
| Specific gravity | ..... | 2.71 |
| Melting-point | 249.3°C | 37.7°C |
| Boiling-point | $603^\circ\text{--}628^\circ\text{C}$ | Decomposes |

Soluble in water, alkalis, tartaric acid and alcohol.

Derivation: By dissolving tin in hydrochloric acid.

Grades: Technical.

Containers: Wooden kegs.

Uses: Reducing agent in dyeing; mordant in cochineal dyeing; manufacture of lakes; tin galvanizing; reagent in analytical chemistry; medicine; re-

moving ink stains; bleaching sugar.
Fire hazard: None.
Railroad shipping regulations: None.

Stannous Chromate* (Tin chromate)

SnCrO_4 .
Color and properties: Brown powder.
Almost insoluble in water.
Derivation: By the interaction of stannous chloride and sodium chromate.
Grades: Technical.
Containers: Glass bottles.
Uses: Decorating porcelain.
Fire hazard: None.
Railroad shipping regulations: None.

Stannous Oxalate* (Tin oxalate)

SnC_2O_4 .
Color and properties: Heavy, white, crystalline powder.
Soluble in acids.
Derivation: By the action of oxalic acid on stannous oxide.
Grades: Technical.
Containers: Wooden kegs.
Uses: Dyeing and printing textiles.
Fire hazard: None.
Railroad shipping regulations: None.

Stannous Oxide* (Tin oxide; Tin monoxide; Tin protoxide) SnO .

Color and properties: Brownish-black powder; unstable in air.
Constants: Specific gravity 6.3; melting-point: Decomposes with combustion.
Soluble in alcohol and ammonium chloride solution; insoluble in water and alkalis.
Derivation: By heating stannous hydroxide in a current of carbon dioxide.
Grades: Technical.
Containers: Wooden kegs.
Uses: Reducing agent.
Fire hazard: None.
Railroad shipping regulations: None.

Stannous Sulfate* (Tin sulfate)

SnSO_4 .
Color and properties: Heavy, white or yellowish, crystalline powder.
Constants: Melting-point: Loses SO_2 at 360°C .
Soluble in water and sulfuric acid.

Derivation: By the action of sulfuric acid on stannous oxide.

Method of purification: Crystallization.

Grades: Technical.
Containers: Wooden kegs.
Uses: Dyeing.
Fire hazard: None.
Railroad shipping regulations: None.

Stannous Tartrate* (Tin tartrate)

$\text{SnC}_4\text{H}_4\text{O}_6$.
Color and properties: Heavy, white, crystalline powder.
Soluble in water.
Derivation: By the action of tartaric acid on stannous oxide.
Grades: Technical.
Containers: Wooden kegs.
Uses: Dyeing and printing fabrics.
Fire hazard: None.
Railroad shipping regulations: None.

Stannum. The Latin name for tin, hence the symbol Sn in chemical nomenclature.

Staphisagria* (Stave's acre; Larkspur).

Derivation: Ripe seed of Delphinium staphisagria.
Habitat: Mediterranean basin and U. S.
Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Staphisagriae Semina, B. P. See Staphisagria.

Star Anise Oil. See Anise oil, Star.

Starch* ($\text{C}_6\text{H}_{10}\text{O}_5$).

Color and properties: White, amorphous, tasteless powder or irregular lumps.
Constants: Specific gravity 1.499-1.513; melting-point: Does not melt; boiling-point: Decomposes (burns) when heated.
Insoluble in cold water, alcohol and ether; forms a jelly with hot water.
Derivation: From corn (maize), arrow-root, potatoes and the like; the material is rasped or ground with

water, the resulting pulp is ground in the ordinary stone-mills, the milky liquid is strained through sieves, allowed to stand a short time to permit sand and the like to settle. The milk is then removed to another tank and the starch allowed to settle, the supernatant liquid removed and the starch washed a number of times and then dried.

Grades: Commercial; laundry; edible.
Varieties: Corn, wheat, rice, potato; tapioca, cassava or arrow-root; alant or inulin.

Containers: Barrels; boxes.

Uses: Manufacture of adhesives; laundries; finishing textiles; food material, as such and in manufacture of invalid foods; explosives; dextrine; reagent in analytical chemistry; medicine; face powders.

Fire hazard: None.

Railroad shipping regulations: None.

Starch Gum. See Dextrin.

Starch, Soluble* (Amylodextrin).

Color and properties: White powder. Soluble in water.

Derivation: By heating starch with glycerin and adding strong alcohol during the cooling.

Grades: Technical.

Containers: Barrels, boxes, tins

Uses: Emulsifying agent; textile industry.

Fire hazard: None.

Railroad shipping regulations: None.

Staurolite. A natural iron-aluminum silicate, $\text{Fe}(\text{AlO})_4(\text{AlOH})(\text{SiO}_4)_2$, occurring in North Carolina and Virginia.

Stave's Acre. See Staphisagria.

Steapsin. See Enzymes, page 504

Stearic Acid. See Acid stearic.

Stearin* (Tristearin; Glycerystearic ester) $(\text{C}_{18}\text{H}_{35}\text{O}_2)_3\text{C}_3\text{H}_5$.

Color and properties: White, odorless, tasteless powder.

Constants: Specific gravity 0.8621; melting-point 71° - 71.5°C .

Soluble in ether, chloroform and carbon bisulfide; very slightly soluble in alcohol; insoluble in water.

Derivation: Solid, natural, animal fats.

Grades: Technical.

Containers: Wooden barrels.

Uses: Candles; soap; leather stuffing.

Fire hazard: None.

Railroad shipping regulations: None.

Acid stearic is often erroneously called stearine.

Stearinic Acid. See Acid stearic.

Stearophanic Acid. See Acid stearic.

Stearin Pitch. See page 500.

Steatite. See Talc.

Steel. See Iron.

Stellite. An exceedingly hard cobalt-chromium alloy used for lathe tools, cutlery, etc.

Stephanite (Brittle silver ore).

Silver-antimony sulfide, $5\text{AgS}\cdot\text{Sb}_2\text{S}_3$, containing 68 per cent of silver and occurring in Colorado, Maine, Montana and Nevada.

Stetefeldite. A mineral of uncertain composition, containing silver, copper, iron, antimony and sulfur. From Nevada.

Stibiconite (Antimony ochre). Natural hydrous antimony oxide, $\text{Sb}_2\text{O}_4\cdot\text{H}_2\text{O}$, from Nevada, containing 74 per cent of antimony.

Stibium. The Latin name for the elementary metal antimony, hence the symbol Sb in chemical nomenclature.

Stibnite (Antimony glance; Gray antimony; Antimony sulfuret). Antimony sulfide, Sb_2S_3 , the principal antimony ore, containing 71 per cent of antimony. Occurs in Arizona, Arkansas, California, Colorado, Idaho, Maryland, Montana, Nevada, New Mexico, Oregon, Utah and Washington.

tick-glue. See Glue, Stick.

tick Lac. See Shellac.

tilbene* (Toluylene; Diphenylethylene)
 $C_6H_5CHCHC_6H_5$.

Color and properties: Colorless or slightly yellow crystals.

Constants: Specific gravity 0.9707; melting-point 124° - 125° C.; boiling-point 306° - 307° C.

Soluble in benzol and ether; slightly soluble in alcohol; insoluble in water. Derivation: By passing toluol over hot lead oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden casks.

Uses: Manufacture of dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

stillingia* (Queen's root; Yaw root; Silver leaf).

Derivation: Root of *Stillingia sylvatica*.

Habitat: South-eastern U. S.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

stillingia Oil (Tallow-seed oil).

Color and properties: Pale yellow, limpid, drying oil; peculiar odor like linseed oil; mustard-like taste.

Constants: Specific gravity 0.9432-0.9458; iodine number 160; saponification number 210.

Slightly soluble in alcohol.

Derivation: From the seeds of the tallow tree, *Stillingia sebifera*, by pressing.

Grades: Technical.

Containers: Tins; barrels.

Uses: Candles; soap; dressing textiles.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Stink-weed. See Stramonium.

Stockholm Tar. See Tar, Pine.

Stone, Red. See Ferric oxide, Red.

Storax. See Styra.

Storax Oil. See Styra oil, page 509.

Storksbill. See Geranium.

Stovaine. See page 509.

Stramonii Folia, B. P. See Stramonium.

Stramonium* (Jamestown weed; Jimson weed; Junson weed; Thorn apple; Stinkweed; Devil's apple; Apple of Peru).

Derivation: Dried leaves of *Datura stramonium*.

Habitat: Europe; Asia and America.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Strawberry Tree. See Euonymus.

Stromeyerite. A natural sulfide of silver and copper, somewhat variable in composition, usually $(AgCu)_2S$. Contains about 50 per cent of silver and 30 per cent of copper. From Arizona, California, Colorado and Nevada.

Strontianite. An important natural source of strontium, being strontium carbonate, $SrCO_3$. Found in New York, Texas, Nova Scotia, etc.

Strontii Bromidum, U. S. P., B. P. See Strontium bromide.

Strontii Iodidum, U. S. P. See Strontium iodide.

Strontii Salicylas, U. S. P. See Strontium salicylate.

Strontium* Sr.

Color and properties: Pale, yellow, soft metal, similar to sodium. Must be kept immersed in naphtha. Occurs in nature in the minerals strontianite (carbonate), brewsterite (silicate) and celestite (sulfate).

Constants: Specific gravity 2.54; melt-

ing-point $900^{\circ}\text{C}.$; boiling-point: Burns when heated in air above melting-point.

Soluble in alcohol and acids; decomposes water on contact.

Derivation: By electrolysis of strontium chloride in a graphite crucible with cooling of the upper, cathodic space.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Strontium Bromide* SrBr_2 .

Color and properties: White, hygroscopic powder. Keep well stoppered.

Constants: Specific gravity 4.210; melting-point: Above $630^{\circ}\text{C}.$; boiling-point: Decomposes.

Soluble in water and alcohol and amyl alcohol.

Derivation: A strontium salt (sulfate, chloride, etc.) is treated with bromine or hydrobromic acid in presence of a reducing agent.

Method of purification: Recrystallization.

Grades: Anhydrous powder; crystal;

U. S. P.; B. P.; technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Strontium Carbonate* SrCO_3 .

Color and properties: White, impalpable powder.

Constants: Specific gravity 3.62; melting-point: Decomposes at about $1075^{\circ}\text{C}.$; boiling-point: Loses CO_2 at $1340^{\circ}\text{C}.$

Soluble in alcohol, acids, carbonated water and solutions of ammonium salts; very slightly soluble in water.

Derivation: Celestite is boiled with a solution of ammonium carbonate or is fused with sodium carbonate.

Method of purification: Ignition to pale red-heat.

Grades: Pure; precipitated; technical.

Containers: Iron canisters; glass bottles.

Uses: Pyrotechnice; manufacture of iridescent glass.

Fire hazard: None.

Railroad shipping regulations: None.

Strontium Chlorate* (a) $\text{Sr}(\text{ClO}_3)_2$

(b) $\text{Sr}(\text{ClO}_3)_2 \cdot 8\text{H}_2\text{O}.$

Color and properties: White, crystalline powder. Must not be triturated with organic materials, liable to cause explosions.

Constants: (a) Specific gravity 3.152; melting-point: Decomposes at $290^{\circ}\text{C}.$

Soluble in water; slightly soluble in alcohol.

Derivation: Strontium hydroxide solution is warmed and chlorine passed in, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Manufacture of red-fire and other pyrotechnics.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Strontium Chloride* (a) SrCl_2

(b) $\text{SrCl}_2 \cdot 6\text{H}_2\text{O}.$

Color and properties: White, crystalline needles; sharp, bitter taste.

| | | |
|------------------|------------------------|---|
| Constants: | (a) | (b) |
| Specific gravity | 3.054 | 1.964. |
| Melting-point | $872^{\circ}\text{C}.$ | Loses $6\text{H}_2\text{O}$ at $112^{\circ}\text{C}.$ |

Soluble in water and alcohol.

Derivation: Strontium carbonate is fused with calcium chloride, the melt extracted with water, the solution concentrated and crystallized.

Method of purification: Recrystallization.

Impurities: Lime.

Grades: Pure crystal or dried; highest purity, crystal; technical.

Containers: Wooden kegs.

Uses: Manufacture of strontium carbonate; production of red flames (alcoholic solution).

Fire hazard: None.

Railroad shipping regulations: None.

Strontium Dioxide. See Strontium peroxide.

Strontium Hydrate. See Strontium hydroxide.

Strontium Hydroxide* (Strontium hydrate) (a) $\text{Sr}(\text{OH})_2$
(b) $\text{Sr}(\text{OH})_2 \cdot 8\text{H}_2\text{O}$.

Color and properties: Colorless, deliquescent crystals.

Constants: Specific gravity: (a) 3.625; (b) 1.396. Melting-point: (a) 375°C .

Soluble in acids and hot water; slightly soluble in cold water.

Derivation: (a) Strontianite is converted into the oxide by ignition, the latter slaked with water. (b) Celestite is fused with sodium carbonate under pressure, and the carbonate formed is extracted with water, evaporated to dryness and ignited as above.

Grades: Technical.

Containers: Wooden kegs.

Uses: Sugar industry.

Fire hazard: None.

Railroad shipping regulations: None.

Strontium Iodide* (a) SrI_2

(b) $\text{SrI}_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: (a) White, crystalline plates; decomposes in moist air. Keep well stoppered. (b) White crystals.

| Constants: | (a) | (b) |
|------------------|---------------------------------------|-------|
| Specific gravity | 4.549 | 4.415 |
| Melting-point | $507^\circ\text{--}645^\circ\text{C}$ | ..... |
| Boiling-point | Decomposes | ..... |

Soluble in water.

Derivation: By treating strontium carbonate with hydriodic acid.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Strontium Nitrate* (a) $\text{Sr}(\text{NO}_3)_2$

(b) $\text{Sr}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$.

Color and properties: White powder.

| Constants: | (a) | (b) |
|------------------|---------------------|-------|
| Specific gravity | 2.98 | 2.249 |
| Melting-point | 645°C} | ..... |

Soluble in water; very slightly soluble in absolute alcohol; insoluble in nitric acid and dilute alcohol.

Derivation: A concentrated solution of strontium chloride is precipitated by means of sodium nitrate.

Method of purification: Recrystallization.

Grades: Pure dry; dry; impalpable powder; technical.

Containers: Wooden kegs.

Uses: Pyrotechnics, marine signals, railroad flares, etc.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Strontium Peroxide* (Strontium dioxide) (a) SrO_2 (b) $\text{SrO}_2 \cdot 8\text{H}_2\text{O}$.

Color and properties: White powder.

Constants: Specific gravity: (a) 0.456.

Melting-point: (a) Decomposes; (b) Loses $8\text{H}_2\text{O}$ at 100°C . and decomposes when heated to a higher temperature.

Soluble in alcohol and ammonium chloride solution; decomposes in hot water.

Derivation: By passing oxygen over heated strontium oxide.

Grades: Technical.

Containers: Tins.

Uses: Bleaching.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Strontium Salicylate*

$\text{Sr}(\text{C}_7\text{H}_5\text{O}_3)_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: White crystals.

Soluble in water and alcohol.

Derivation: By the interaction of strontium hydroxide and salicylic acid.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Strontium Sulfate* SrSO_4 .

Color and properties: White precipitate or crystals of the mineral celestite.

Constants: Specific gravity 3.71-3.97; melting-point 1605°C ; boiling-point: Decomposes at white-heat.

Slightly soluble in concentrated acids; very slightly soluble in water; insoluble

ble in alcohol and dilute sulfuric acid.

Derivation: (a) Celestite is ground;
(b) Precipitation of any soluble strontium salt by means of sodium sulfate.

Method of purification: Washing with water.

Impurities: Sodium sulfate.

Grades: Commercial; free from sodium salts.

Containers: Wooden kegs.

Uses: Pyrotechnics.

Fire hazard: None.

Railroad shipping regulations: None.

Strophanthi Semina, B. P. See *Strophanthus*.

Strophanthus.

Derivation: Ripe seeds of *Strophanthus kombe*.

Habitat: Central Africa, Asia, Philippines.

Grades: Technical; U. S. P.; B. P.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Strychnina, U. S. P., B. P. See *Strychnine*.

Strychninæ Hydrochloridum, B. P. See *Strychnine*.

Strychninæ Nitras, U. S. P. See *Strychnine*.

Strychninæ Sulphas, U. S. P. See *Strychnine*.

Strychnine* $C_{21}H_{22}N_2O_2$.

Color and properties: Hard, white, crystalline alkaloid; very bitter taste; very poisonous.

Constants: Melting-point 268°C .

Soluble in chloroform; slightly soluble in alcohol; very slightly soluble in water and ether.

Derivation: By extraction of the seeds of *Nux vomica* with acetic acid, filtration, precipitation by alkali and filtration.

Method of purification: Recrystallization.

Grades: Crystal; powder; U. S. P.; B. P.; technical.

Containers: Glass bottles.

Uses: In medicine as such, or as the hydrochloride, bisulfate, lactate, nitrate, sulfate or other salt.

Fire hazard: None.

Railroad shipping regulations: None.

Stypticin. See *Cotarnine hydrochloride*.

Styrax (*Storax*, Oriental sweet gum).

Color and properties: (a) Amber colored droplets or powder (b) Thick, tough, gray, semi-liquid mass.

Chief constituents: Styrene; cinnamic acid, ethyl vanillin; styracin, etc.

| Constants: | (a) | (b) |
|------------------|---|-------|
| Specific gravity | 0.890-1.100 | ..... |
| Boiling-point | $150^{\circ}\text{--}300^{\circ}\text{C}$ | ..... |
| Optical rotation | $+3$ to -38 | ..... |

Soluble in ether and warm alcohol; insoluble in water.

Derivation: A balsam obtained from the inner bark of *Liquidambar orientalis*; habitat: Asia Minor.

Method of purification: Solution in ether and treatment with fused calcium chloride.

Grades: Technical; U. S. P.; B. P.

Containers: Barrels; boxes.

Uses: Medicine; microscopy; fumigating powders and tablets; perfumery; source of styrene.

Fire hazard: None.

Railroad shipping regulations: None.

Styrax Oil. See page 509.

Styrax Præparatus, B. P. See *Styrax*.

Styrene* (Styrol; Phenylethylene, Styrolene; Cinnamene; Cinnamol; Vinylbenzene) $C_6H_5CHCH_2$.

Color and properties: Highly refractive, yellowish, oily liquid; aromatic odor.

Constants: Specific gravity 0.9121; boiling-point 146°C .

Soluble in alcohol and ether; insoluble in water.

Derivation: From liquid styrax.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Styrol. See Styrene.

Styrolene. See Styrene.

Styrone. See Cinnamyl alcohol.

Styrylic Alcohol. See Cinnamyl alcohol.

"Sublimate." See Mercuric chloride.

Sublimate, Corrosive. See Mercuric chloride.

Succinic Acid. See Acid succinic.

Succinonitrile. See Ethylene cyanide.

Succus Limonis, B. P. Lemon juice.

Succus Scoparii, B. P. Juice of broom.

Succus Taraxaci, B. P. Juice of taraxacum.

Sucrose. See Sugar, Cane

Sugar, Acorn. See Quercitol.

Sugar, Beet. See Sugar, Cane and Beet.

Sugar, Cane and Beet* (Saccharose; Sucrose) $C_{12}H_{22}O_{11}$.

Color and properties. Hard, white, dry crystals, lumps or powder; sweet taste.

Constants: Specific gravity 1.5877; melting-point $189.2^{\circ}C$; boiling-point Burns.

Soluble in water; very slightly soluble in alcohol.

Derivation: By crushing of sugar-cane with water (*Saccharum officinarum*) or extraction of the sugar-beet (*Beta vulgaris*) with water, and pressing.

Method of purification: Treatment of solution with lead acetate, filtration, concentration, crystallization and coloring with ultramarine.

Grades: Cube, lump or cut: White granular sugar molded or cut into cubes.

Powdered, icing and bar sugars made by grinding coarse granulated sugar into fine particles and then separating these particles by screening them through fine silk cloth. Starch is sometimes added to powdered sugar to prevent it from caking.

Bar sugar: A grade of sugar used in the preparation of beverages.

Brown and yellow sugars, or "softs" as they are usually called, comprise fifteen grades, ranging in color from a creamy white to a dark brown. These sugars are used chiefly by bakers in making ginger-bread, pies and cakes, although a small quantity finds its way directly into households for ordinary domestic consumption. The characteristics of yellow sugars are that they have a small grain and contain a sufficient amount of molasses to make them moist to the touch, properties brought about by a radically different method of boiling from that applied to white sugars. They also contain a certain amount of invert sugar which preserves the softness of grain and prevents subsequent caking or hardening.

White, confectioner's or granulated sugar, obtained by thorough bleaching and filtration of crude or raw sugars and subsequent crystallization. The grades vary in accordance with the size of the crystals which is regulated by the conduct of the final stages of the process of evaporation. Demerara yellow is a yellow colored granulated sugar quite extensively used in Europe for household purposes.

Loaf sugar: Granulated sugar molded into large, tall cones, which are broken up as needed. The form in which all sugar formerly came into the household; still in considerable use in Europe.

Containers: Barrels; bags; cardboard boxes.

Uses: Food; sweetening; manufacture

of sirups; confectionery; preserves and jams; demulcent and lenitive; soap; pharmaceutical products; caramel.

Fire hazard: None.

Railroad shipping regulations: None.

Sugar Coloring. See Caramel.

Sugar of Lead. See Lead acetate.

Sugar of Milk. See Milk sugar.

Sulfanilic Acid, Meta-. See Acid sulfanilic, Meta-.

Sulfanilic Acid, Para-. See Acid sulfanilic, Para-, page 503.

Sulfethylic Acid. See Acid ethylsulfuric.

Sulfite Acid Liquor. See page 509.

Sulfoarsenious Anhydride. See Arsenic sulfide, Yellow.

Sulfobenzeneazodimethylaniline. See Dimethylaninoazobenzene sulfonate.

Sulfocarbolic Acid. See Acid phenolsulfonic.

Sulfocholeic Acid. See Acid taurocholic.

Sulfonal* (Sulfone methane; Diethylsulfone dimethyl-methane)
(CH_3)₂C(SO₂C₂H₅)₂.

Color and properties: Colorless, crystalline powder.

Constants: Melting-point 125°-126°C.; boiling-point: Decomposes at 300°C.

Soluble in alcohol; slightly soluble in water and ether.

Derivation: Anhydrous acetone and anhydrous ethylmercaptan are combined by means of a stream of anhydrous hydrochloric acid.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sulfone Methane. See Sulfonal.

Sulfoneethylmethane (Trional)
 $\text{CH}_3(\text{C}_2\text{H}_5)\text{C}(\text{SO}_2\text{C}_2\text{H}_5)_2$.

Color and properties: Colorless, lustrous, crystalline powder; odorless; characteristic, slightly bitter taste.

Constants: Melting-point 76°C.

Soluble in water, alcohol and ether.

Derivation: By passing dry hydrochloric acid gas into a mixture of anhydrous mercaptan and methylethyl ketone and oxidizing the product.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sulfourea. See Thiocarbamide.

Sulfovinic Acid. See Acid ethylsulfuric.

Sulfovinous Acid. See Acid ethylsulfurous.

Sulfur* (Brimstone; Flowers of sulfur) S.

Color and properties: (a) Amorphous soft; (b) Hard yellow.

Found native in Alabama, California, Colorado, Georgia, Idaho, Kentucky, Louisiana, Nevada, New Mexico, Tennessee, Texas, Utah and Wyoming, and Sicily.

| Constants: | (a) | (b) |
|------------------|-------------|---------|
| Specific gravity | 1.9556 | 2.046 |
| Melting-point | About 120°C | ... |
| Boiling-point | 444.6°C | 444.6°C |
| Ignition-point | .... | 255°C |

Soluble in carbon bisulfide and sulfur chloride; insoluble in water.

Derivation: Mined as such or molten underground by superheated water, pumped up and allowed to solidify in bins from which it is shipped.

Method of purification: Precipitation or sublimation.

Grades of the hard variety: Crystals; crude (brimstone); roll; precipitated, pure; (milk of sulfur); sublimed (flowers of sulfur); washed; U. S. P.; B. P.; flour.

Containers: Box cars; barrels; boxes.

Uses: Manufacture of gunpowder, matches, sulfuric and sulfurous acids;

sulfurizing wine and beer vats; making casts and molds; pharmacy; bleaching; medicine; iron sulfide; disinfecting (by burning); rubber industry.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Sulfur Bichloride. See Sulfur dichloride.

Sulfur Chloride* (Sulfur monochloride; Sulfur subchloride) S_2Cl_2 .

Color and properties: Amber to yellowish-red, oily, fuming liquid; penetrating odor; irritating effect on the eyes, lungs and mucous membranes. Keep well stoppered.

Constants: Specific gravity 1.7094; melting-point $-80^{\circ}C$; boiling-point $138^{\circ}C$.

Soluble in alcohol, ether, benzol, carbon bisulfide and amyl acetate; decomposes on contact with water.

Derivation: By passing chlorine over molten sulfur.

Method of purification: Distillation.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Rubber industry for vulcanizing; manufacturing vulcanized oils; rubber substitutes and cements; purifying sugar juices; sulfur solvent; manufacture of military poison gas.

Fire hazard: None.

Railroad shipping regulations: White label.

Sulfur Dichloride* (Sulfur bichloride) SCl_2 .

Color and properties: Reddish-brown liquid.

Constants: Specific gravity 1.622; melting-point $-78^{\circ}C$; boiling-point $59^{\circ}C$; decomposes at $64^{\circ}C$.

Decomposes in water.

Derivation: Chlorine is passed into sulfur monochloride to saturation, at 6° to 10° , followed by carbon dioxide to drive off the excess of chlorine.

Grades: Technical.

Containers: Iron drums.

Uses: Rubber industry for vulcanizing; manufacturing vulcanized oils; rubber substitutes and cements; purifying sugar juices; sulfur solvent.

Fire hazard: None.

Railroad shipping regulations: White label.

Sulfur Dioxide* (Acid sulfurous, Anhydride) SO_2 .

Color and properties. Colorless gas or liquid; suffocating odor; corrosive poison.

Constants: Gas; specific gravity 1.43368; melting-point $-76.1^{\circ}C$; boiling-point $-10^{\circ}C$.

Soluble in water.

Derivation: By roasting pyrites in special furnaces. The gas is readily liquefied by cooling it with ice and salt, or at a pressure of three atmospheres.

Grades: Commercial.

Containers: Iron pressure tanks.

Uses: Artificial ice industry; bleaching straw, feathers and silk; preservative for beer, wine and meats; cellulose and paper industries.

Fire hazard: None.

Railroad shipping regulations: Green label (Gas).

Sulfur Dioxide. See Acid sulfurous.

Sulfur Flour. See Sulfur.

Sulfur Flowers. See Sulfur.

Sulfur Monochloride. See Sulfur chloride.

Sulfur Olive Oil. See Olive oil (foots).

Sulfur Subchloride. See Sulfur chloride.

Sulfur Trioxide. See Acid sulfuric.

Sulfuretted Hydrogen. See Hydrogen sulfide.

Sulfuric Acid. See Acid sulfuric.

Sulfuric Ether. See Ether.

Sulfurous Acid. See Acid sulfurous.

Sulfurous Acid, Anhydride. See Sulfur dioxide.

Sulphonal, B. P. See Sulfonal.

Sulphonmethanum, U. S. P. See Sulfonal.

Sulphur. See Sulfur.

Sulphur Lotum, U. S. P. See Sulfur.

Sulphur Præcipitatum, U. S. P., B. P. See Sulfur.

Sulphur Sublimatum, U. S. P., B. P. See Sulfur.

Sumac* (*Shumac, Rhus glabra*).

Derivation: The leaves and young twigs from various plants of the *Rhus* family. Found in many countries; best grades from Italy, Spain, Greece and Virginia.

Grades: 25 per cent Tannin (liquid). Containers: Powder: Burlap bags. Extract: Wooden barrels.

Uses: Textile dyeing; tanning industry; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sumac Wax. See Japan wax.

Sumbul (Musk root).

Derivation: Dried rhizome and root of an undetermined plant, probably belonging to the *Umbelliferae*.

Habitat: Central Asia, East Indies.

Grades: Technical; U. S. P.

Containers: Bags.

Uses: Medicine; manufacture of perfumes.

Fire hazard: None.

Railroad shipping regulations: None.

Sunflower. See *Helianthus*.

Sunflower Oil.*

Color and properties: Pale yellow liquid; mild taste; pleasant odor.

Constants: Specific gravity 0.924-0.926; iodine value 125; refractive index 1.4611.

Soluble in alcohol, ether, chloroform and carbon bisulfide.

Derivation: By expression from the seeds of *Helianthus annuus*.

Method of purification: Filtration. Grades: Crude; refined.

Containers: Wooden barrels.

Uses: Varnishes; soap; illuminant; edible oil, particularly in Russia.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Superpalite. See Trichloromethyl chloroformate.

Superphosphate. See Calcium phosphate, Monobasic.

Suprarenalium Siccum, U. S. P. Dried suprarenal glands.

Swallow-Wort. See Vincetoxicum.

Sweet Bay. See *Laurus*.

Sweet Bay Oil. See Laurel oil, Volatile.

Sweet Cane. See *Calamus*.

Sweet Fennel. See *Fennel*.

Sweet Flag. See *Calamus*.

Sweet Grass. See *Calamus*.

Sweet Gum, Oriental. See *Styrax*.

Sweet Oil. See Olive oil.

Sweet Viburnum. See *Viburnum prunifolium*.

Sweet Wood Bark. See *Cascarilla*.

Sykose. See Saccharine.

Sylvanite. A native gold-silver telluride, (AuAg)₂Te₂, containing 24.5 per cent of gold and 13.5 per cent of silver. Found in Colorado, Oregon, Washington and Wyoming.

Sylvine. See Potassium chloride.

Synthetic Indigo. See Indigotin.

Syntonin* (Para-peptone, Muscle fibrin). Color and properties: Yellow powder. Soluble in dilute hydrochloric acid and alkaline carbonates.

Derivation: By conversion of albu-

mose by means of dilute hydrochloric acid.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Syrupus, U. S. P., B. P. Sirup.

Syrupus Acaciæ, U. S. P. Sirup of acacia.

Syrupus Acidi Citrici, U. S. P. Sirup of citric acid.

Syrupus Acidi Hydriodici, U. S. P., B. P. Sirup of hydriodic acid.

Syrupus Aromaticus, B. P. Aromatic sirup.

Syrupus Auranthii, U. S. P., B. P. Sirup of orange.

Syrupus Auranthii Florum, U. S. P., B. P. Sirup of orange flowers.

Syrupus Calcii Lactophosphatis, U. S. P., B. P. Sirup of calcium lactophosphate.

Syrupus Cascaræ Aromaticus, B. P. Aromatic sirup of cascara.

Syrupus Chloral, B. P. Sirup of chloral.

Syrupus Codeinæ Phosphatis, B. P. Sirup of codeine phosphate.

Syrupus Ferri Iodidi, U. S. P., B. P. Sirup of ferrous iodide.

Syrupus Ferri Phosphatis, B. P. Sirup of ferrous phosphate.

Syrupus Ferri Phosphatis Cum Quinina Et Strychnina. Sirup of ferrous phosphate with quinine and strychnine.

Syrupus Glucosi, B. P. Sirup of glucose.

Syrupus Hypophosphitum, U. S. P. Sirup of hypophosphites.

Syrupus Ipecacuanhæ, U. S. P. Sirup of ipecac.

Syrupus Lactucarii, U. S. P. Sirup of lactucarium.

Syrupus Limonis, B. P. Sirup of lemon.

Syrupus Picis Liquidæ, U. S. P. Sirup of tar.

Syrupus Pruni Virginianæ, U. S. P., B. P. Sirup of wild cherry.

Syrupus Rhei, U. S. P., B. P. Sirup of rhubarb.

Syrupus Rhei Aromaticus, U. S. P. Aromatic sirup of rhubarb.

Syrupus Rhoceados, B. P. Sirup of red-poppy.

Syrupus Rosæ, B. P. Sirup of rose.

Syrupus Sarsaparillæ Compositus, U. S. P. Compound sirup of sarsaparilla.

Syrupus Scillæ, U. S. P., B. P. Sirup of squill.

Syrupus Scillæ Compositus, U. S. P. Compound sirup of squill.

Syrupus Senegæ, U. S. P. Sirup of senega.

Syrupus Sennæ, U. S. P., B. P. Sirup of senna.

Syrupus Tolutanus, U. S. P., B. P. Sirup of tolu.

Syrupus Urgineæ, B. P. Sirup of ur-ginea.

Syrupus Zingiberis, U. S. P., B. P. Sirup of ginger.

T

Tabbyite. See Wurtzilite.

Tabellæ Trinitrini, B. P. Nitroglycerin tablets.

Table Salt. See Sodium chloride.

Tacamahac.

Derivation: The resin from various species of *Amirys* and *lcica*.

Habitat: West Indies and South America.

Grades: Technical.

Containers: Bags.

Uses: Medicine; fumigating mixtures.

Fire hazard: None.

Railroad shipping regulations: None.

Tachiol. Silver fluoride.

Tailed Pepper. See Cubeba.

"Takamol." A proprietary brand of Para-aminophenol.

Talc (Soapstone; Steatite; Potstone).

A natural hydrous magnesium silicate, $H_2O_3MgO_4SiO_2$. It is soft, easily cut or powdered and has a greasy or soapy feel. When occurring in more or less impure form in large beds, it is called steatite or soapstone. It is also called potstone because it was formerly used for making cooking-pots, on account of the ease with which it is hollowed out and because of its resistance to ordinary heats. When cut into crayons it is called French chalk. Occurs widely scattered throughout the United States. See also Magnesium silicate.

Talcum. See Magnesium silicate.

Talcum Purificatum, U. S. P. See Magnesium silicate.

Tallow.*

Derivation: The fat extracted from the solid fat or "suet" of cattle, sheep or horses. The quality varies de-

pending on the season, the food and age of the animal.

Chief constituents: Stearin, palmitin and olein.

Grades: Edible; inedible; beef tallow; mutton tallow; horse fats.

Containers: Wooden barrels.

Uses: Soap stock; leather dressing; candles; food; railway axle grease;

manufacture of stearine and oleo oil.

Fire hazard: None.

Railroad shipping regulations: None.

Tallow-seed Oil. See Stillingia oil.

Tallow Shrub.* See Myrica.

Tallow, Vegetable.

Derivation: A hard fat from the fruit of the Chinese tallow tree. The fruit is steamed in a perforated kettle and the fat which melts is collected.

Grades: Technical.

Containers: Boxes.

Uses: Soap stock.

Fire hazard: None.

Railroad shipping regulations: None.

Tamarind.*

Derivation: Preserved pulp of the fruit of *Tamarindus indica*.

Habitat: East Indies, Africa and West Indies.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; condimental sauces.

Fire hazard: None.

Railroad shipping regulations: None.

Tamarindus, B. P. See Tamarind.

Tanacetum* (Tansy; Tanzy).

Derivation: Leaves and tops of *Tanacetum vulgare*.

Habitat: Asia, Europe and North America.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

mose by means of dilute hydrochloric acid.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Syrupus, U. S. P., B. P. Sirup.

Syrupus Acaciæ, U. S. P. Sirup of acacia.

Syrupus Acidi Citrici, U. S. P. Sirup of citric acid.

Syrupus Acidi Hydriodici, U. S. P., B. P. Sirup of hydriodic acid.

Syrupus Aromaticus, B. P. Aromatic sirup.

Syrupus Auranthii, U. S. P., B. P. Sirup of orange.

Syrupus Auranthii Florum, U. S. P., B. P. Sirup of orange flowers.

Syrupus Calcii Lactophosphatis, U. S. P., B. P. Sirup of calcium lactophosphate.

Syrupus Cascaræ Aromaticus, B. P. Aromatic sirup of cascara.

Syrupus Chloral, B. P. Sirup of chloral.

Syrupus Codeinæ Phosphatis, B. P. Sirup of codeine phosphate.

Syrupus Ferri Iodidi, U. S. P., B. P. Sirup of ferrous iodide.

Syrupus Ferri Phosphatis, B. P. Sirup of ferrous phosphate.

Syrupus Ferri Phosphatis Cum Quinina Et Strychnina. Sirup of ferrous phosphate with quinine and strychnine.

Syrupus Glucosi, B. P. Sirup of glucose.

Syrupus Hypophosphitum, U. S. P. Sirup of hypophosphites.

Syrupus Ipecacuanhæ, U. S. P. Sirup of ipecac.

Syrupus Lactucarii, U. S. P. Sirup of lactucarium.

Syrupus Limonis, B. P. Sirup of lemon.

Syrupus Picis Liquidæ, U. S. P. Sirup of tar.

Syrupus Pruni Virginianæ, U. S. P., B. P. Sirup of wild cherry.

Syrupus Rhei, U. S. P., B. P. Sirup of rhubarb.

Syrupus Rhei Aromaticus, U. S. P. Aromatic sirup of rhubarb.

Syrupus Rhoceados, B. P. Sirup of red-poppy.

Syrupus Rosæ, B. P. Sirup of rose.

Syrupus Sarsaparillæ Compositus, U. S. P. Compound sirup of sarsaparilla.

Syrupus Scillæ, U. S. P., B. P. Sirup of squill.

Syrupus Scillæ Compositus, U. S. P. Compound sirup of squill.

Syrupus Senegæ, U. S. P. Sirup of senega.

Syrupus Sennæ, U. S. P., B. P. Sirup of senna.

Syrupus Tolutanus, U. S. P., B. P. Sirup of tolu.

Syrupus Urgineæ, B. P. Sirup of ur-ginea.

Syrupus Zingiberis, U. S. P., B. P. Sirup of ginger.

T

Tabbyite. See Wurtzilite.

Tabellæ Trinitrini, B. P. Nitroglycerin tablets.

Table Salt. See Sodium chloride.

Tacamahac.

Derivation: The resin from various species of *Amirys* and *lcica*.

Habitat: West Indies and South America.

Grades: Technical.

Containers: Bags.

Uses: Medicine; fumigating mixtures.

Fire hazard: None.

Railroad shipping regulations: None.

Tachiol. Silver fluoride.

Tailed Pepper. See Cubeba.

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Uses: Soap stock.

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Containers: Boxes.

Uses: Medicine; condimental sauces.

Fire hazard: None.

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Habitat: Asia, Europe and North America.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Tartar Emetic. See Antimony-potassium tartrate.

Tartar, Salts of. See Potassium carbonate.

Tartar, Soluble. Potassium tartrate.

Tartaric Acid. See Acid tartaric.

Tartaric Acid, Inactive. See Acid racemic.

Tartarine. A yellow dyestuff.

Tartarized Antimony. See Potassium-antimony tartrate.

Tartarus Vitriolatus. See Potassium sulfate.

Tartrated Antimony. See Potassium-antimony tartrate.

Taurocholic Acid. See Acid taurocholic

Tea Oil (Tea-seed oil).

Color and properties. Straw or amber colored liquid, resembling olive oil. Constants: Specific gravity 0.917-0.927; saponification value 194; iodine value 88.

Soluble in alcohol, ether and chloroform.

Derivation: By expressing the seeds of *Thea sasanqua*. (This is not the plant from which tea is prepared, although botanically related.)

Impurities: Saponin; other similar but cheaper oils.

Method of purification: Rectification

Grades: Technical.

Containers: Wooden barrels

Uses: Illuminant; soap making; edible oil; hair oil; lubricant.

Fire hazard: None.

Railroad shipping regulations: None.

Tea-seed Oil. See Tea oil.

Teel Oil. See Sesame oil.

Telluric Acid. See Acid telluric.

Telluric Hydroxide, Dehydrated. See Acid telluric.

Telluric Oxide, Trihydrated. See Acid telluric.

Tellurium* Te.

Color and properties: Dark gray powder.

Constants: Specific gravity 6.27-6.015; melting-point 452°-446°C.; boiling-point 1390°C.

Soluble in sulfuric acid, nitric acid; potassium hydroxide and potassium cyanide solution; insoluble in water.

Derivation: By the reduction of telluric oxide.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Ceramics; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Tengerite. A Texas mineral supposed to be chiefly yttrium carbonate.

Tennantite (Gray copper ore). A copper-arsenic sulfide, $3\text{Cu}_2\text{S} \cdot \text{As}_2\text{S}_3$. Contains 57.5 per cent of copper. Part or all of the arsenic may be replaced by antimony, the tennantite gradually grading into tetrahedrite. Found in Colorado, Montana and Wyoming.

Tenorite. Natural black copper oxide, CuO , in the form of minute black scales. Contains about 75 per cent of copper. Occurs in Arizona, New Mexico, Oregon, Utah and Wyoming.

Tephroite. Manganese ortho-silicate, $2\text{MnO} \cdot \text{SiO}_2$, as found in New Jersey. Often also contains small quantities of manganese, iron and zinc.

Terebenum, B. P., U. S. P. Terebene.

Terebinthina Canadensis, B. P. Canada turpentine.

Terlinguaite. Natural mercury oxychloride, Hg_2ClO , containing 88 per cent of mercury from Texas.

Terminala Chebula. See Myrabolans.

T

Tabbyite. See Wurtzilite.

Tabellæ Trinitrini, B. P. Nitroglycerin tablets.

Table Salt. See Sodium chloride.

Tacamahac.

Derivation: The resin from various species of *Amirys* and *lcica*.

Habitat: West Indies and South America.

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Containers: Wooden barrels.

Uses: Soap stock; leather dressing; candles; food; railway axle grease;

manufacture of stearine and oleo oil.

Fire hazard: None.

Railroad shipping regulations: None.

Tallow-seed Oil. See Stillingia oil.

Tallow Shrub.* See Myrica.

Tallow, Vegetable.

Derivation: A hard fat from the fruit of the Chinese tallow tree. The fruit is steamed in a perforated kettle and the fat which melts is collected.

Grades: Technical.

Containers: Boxes.

Uses: Soap stock.

Fire hazard: None.

Railroad shipping regulations: None.

Tamarind.*

Derivation: Preserved pulp of the fruit of *Tamarindus indica*.

Habitat: East Indies, Africa and West Indies.

Grades: Technical; U. S. P.; B. P.

Containers: Boxes.

Uses: Medicine; condimental sauces.

Fire hazard: None.

Railroad shipping regulations: None.

Tamarindus, B. P. See Tamarind.

Tanacetum* (Tansy; Tanzy).

Derivation: Leaves and tops of *Tanacetum vulgare*.

Habitat: Asia, Europe and North America.

Grades: Technical.

Containers: Bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Method of purification: Distillation.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Organic preparations; solvent.
 Fire hazard: None.
 Railroad shipping regulations: None.

Tetrachloroethylene Dichloride. See Carbon trichloride.

Tetrachloromethane. See Carbon tetrachloride.

Tetrachlorophthalic Acid. See Acid tetrachlorophthalic.

Tetrachloroquinone. See Chloranil.

Tetradymite. Natural bismuth telluride, $\text{Bi}_2(\text{Te.S})_3$, or $2\text{Bi}_2\text{Te}_3.\text{Bi}_2\text{S}_3$, the former containing about 50 per cent and the latter about 60 per cent of bismuth. Also, often contains selenium, gold, copper and iron. Found in Arizona, California, Colorado, Maryland, Montana, New Mexico, North Carolina, South Dakota and Virginia.

Tetrahedrite (Gray copper ore). A natural copper-antimony sulfide, closely related to tennantite. It is essentially $3\text{Cu}_2\text{S}.\text{Sb}_2\text{S}_3$, contains about 52 per cent of copper. Often contains iron, lead, zinc, mercury, silver and arsenic, and occurs in Arizona, California, Colorado, Idaho, Massachusetts, Montana, Nevada, New Mexico, North Carolina, Oregon, Tennessee, Utah and Washington.

Tetrahydroxyflavenol. See Quercetin.

Tetramethyldiaminobenzhydrol* (Tetramethyldiaminodiphenylcarbinol) $(\text{CH}_3)_2\text{N}.\text{C}_6\text{H}_4\text{CH}(\text{OH}).\text{C}_6\text{H}_4\text{N}(\text{CH}_3)_2$.

Color and properties: Colorless prisms; forms a colorless solution in ether or benzol and a blue one in alcohol or acetic acid.

Constants: Melting-point 96°C .

Soluble in alcohol, ether, benzol and acetic acid.

Derivation: By the reaction of tetra-

methyldiaminodiphenylmethane, hydrochloric acid and glacial acetic acid, oxidized with lead peroxide.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Tetramethyldiaminobenzophenone*

(Michler's ketone)

$(\text{CO}(\text{C}_6\text{H}_4\text{N}(\text{CH}_3)_2)_2$.

Color and properties: Yellowish-white, glittering, crystalline leaflets.

Constants: Melting-point 174°C ; boiling-point: Decomposes at 360°C .

Soluble in alcohol and ether.

Derivation: By passing carbonyl chloride gas into dimethylaniline at ordinary temperature, until the latter has increased in weight by 40 per cent.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Tetramethyldiaminodiphenylcarbinol.

See Tetramethyldiaminobenzhydrol.

Tetramethyldiaminodiphenylmethane*

$\text{H}_2\text{C}(\text{C}_6\text{H}_4\text{N}(\text{CH}_3)_2)_2$.

Color and properties: Yellowish leaflets or glistening plates.

Constants: Melting-point $90^\circ\text{--}91^\circ\text{C}$; boiling-point 390°C .

Derivation: By heating dimethylaniline with hydrochloric acid and formaldehyde.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden barrels.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Tetranitroaniline.* A military explosive, prepared by nitrating meta-nitraniline.

Tetraoxydiphenyl. See Diresorcin.

Tetraoxyphthalophenone Anhydride. See Fluorescein.

Constants: Specific gravity 9.876.
Soluble in sulfuric acid; insoluble in water.
Derivation: By the reduction of thorium nitrate.
Grades: Technical.
Containers: Wooden kegs.
Uses: Incandescent gas mantles.
Fire hazard: None.
Railroad shipping regulations: None.

Thorium Nitrate* $\text{Th}(\text{NO}_3)_4 \cdot 12\text{H}_2\text{O}$.
Color and properties: White, crystalline mass.
Soluble in water and alcohol.
Derivation: By extraction from monazite sand.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Incandescent gas mantles.
Fire hazard: Dangerous.
Railroad shipping regulations: Yellow label.

Thorium Ore. See Monazite.

Thorium Oxide. See Thorium dioxide.

Thorn Apple. See Stramonium.

Thorogummite. A natural, hydrous silicate of uranium and thorium $\text{UO}_3 \cdot \text{ThO}_2 \cdot 3\text{SiO}_2 \cdot 6\text{H}_2\text{O}$. Found in Texas.

Thoroughwort. See Eupatorium.

Three-Leaved Ivy. See *Rhus toxicodendron*.

Thuja Oil.

Color and properties: Pale yellow liquid; characteristic, rather agreeable odor.
Chief known constituents: D-pinene; l-fenchone; thujone.
Constants: Specific gravity 0.915-0.925.
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: Distilled from the leaves of the white cedar, *Thuja occidentalis*.

Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Thus. See Gum thus.

Thyme.*

Derivation: The herb, *Thymus vulgaris*.
Habitat: Southern Europe; cultivated in England and U. S.
Grades: Technical.
Containers: Bags.
Uses: Medicine; flavoring.
Fire hazard: None.
Railroad shipping regulations: None.

Thyme Camphor. See Thymol.

Thyme Oil.

Color and properties: Yellowish or yellowish-red liquid; strong odor of thyme; aromatic, pungent, cooling taste.
Chief known constituents: Thymol; carvacrol; cymene; linalol; borneol.
Constants: Specific gravity 0.905-0.950.
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: Distilled from the leaves and flowering tops of *Thymus vulgaris*.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Flavoring.
Fire hazard: None.
Railroad shipping regulations: None.

Thyme Oil, Wild.

Color and properties: Yellowish liquid; agreeable melissa-like aroma, with a slight odor of thyme.
Chief known constituents: Thymol; carvacrol.
Constants: Specific gravity 0.890-0.920.
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: Distilled from the dry herb, *Thymus serpyllum*.
Method of purification: Rectification.
Grades: Technical.

Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Thymic Acid. See Thymol.

Thymiode. See Thymol iodide.

Thymiodol. See Thymol iodide.

Thymodin. See Thymol iodide.

Thymol* (Isopropyl-meta-cresol, Thyme camphor. Thymic acid, Methypropyl-phenol) $(\text{CH}_3)_2\text{CH}.\text{C}_6\text{H}_3(\text{CH}_3)\text{OH}$. Color and properties: Colorless crystals.

Constants: Specific gravity 0.979; melting-point 49°C .; boiling-point 231.8°C .

Soluble in alcohol, carbon bisulfide, chloroform, oil, alkalis and ether; slightly soluble in water and glycerine.

Derivation: From ajowan-seed oil or horse-mint oil by treatment with caustic soda and decomposition of the sodium salt with hydrochloric acid.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; glass bottles.

Uses: Medicine; perfumery; thymol compounds; microscopy; preservative; embalming.

Fire hazard: None.

Railroad shipping regulations: None.

Thymol Iodide* (Thymotol, Thymiode, Thymiodol, Thymodin)

$\text{C}_6\text{H}_2(\text{CH}_3)(\text{OH})(\text{C}_3\text{H}_7)\text{I}$.

Constants: Melting-point 69°C .

Color and properties: Red-brown powder or crystals.

Soluble in alcohol and ether; insoluble in water.

Derivation: By the interaction of thymol and potassium iodide in alkaline solution.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Thymolis Iodidum, U. S. P. See Thymol iodide.

Thymotol. See Thymol iodide.

Thyroideum Siccum, U. S. P., B. P. Dried thyroid glands.

Tiemannite. Natural mercuric selenide, HgSe , containing 71.7 per cent mercury and 28.3 per cent selenium. Found in Utah.

Tiglic Acid. See Acid tiglic.

Tigium. See page 510.

Tilia. See Linden.

Tin (Stannum) Sn.

Color and properties: Silver-white, ductile metal.

Constants: Specific gravity 7.298; melting-point 232°C .; boiling-point $1450^\circ\text{--}1600^\circ\text{C}$.

Soluble in acids, and hot potassium hydroxide solution; insoluble in water.

Derivation: By roasting the ore (cassiterite) in a reverberatory furnace, or by smelting in an electric furnace. The tin of commerce comes chiefly from Straits Settlements, Bolivia and Nigeria.

Grades: Technical.

Containers: Boxes.

Uses: Metallurgy; tin-plate; household utensils; still coils; solder; alloys; bronze; coinage; chemical apparatus; electroplating; piping; tin salts.

Fire hazard: None.

Railroad shipping regulations: None.

Note: In speaking of fabricated articles "tin" is often incorrectly used when tin-plate (thin sheets of iron coated with tin) is meant, e.g. "a tin can." To distinguish, articles (such as condenser coils) actually made of solid tin are said to be made of "block tin."

Tin Anhydride. See Stannic anhydride.

Tin Ash. See Stannic anhydride.

Tin Bichloride. See Stannic chloride.

Constants: Specific gravity 9.876.
Soluble in sulfuric acid; insoluble in water.
Derivation: By the reduction of thorium nitrate.
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Derivation: Distilled from the dry herb, *Thymus serpyllum*.
Method of purification: Rectification.
Grades: Technical.

Titanium Oxalate* $\text{Ti}_2(\text{C}_2\text{O}_4)_3 \cdot 10\text{H}_2\text{O}$.

Color and properties: Yellow prisms. Soluble in water; insoluble in alcohol and ether.

Derivation: By the action of oxalic acid on titanous chloride.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Mordant in textile dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Titanium Oxides* (a) Sesquioxide Ti_2O_3 ; (b) Dioxide (Titanic acid anhydride) TiO_2 ; (c) Peroxide TiO_3 .

Color and properties: (a) Black amorphous powder; (b) white to black crystals; (c) yellow powder.

Constants: Specific gravity: (b) 3.75-4.25.

Melting-point: (a) oxidizes; (b) 1560°C .

Soluble in acids; insoluble in water.

Derivation: (a) By the oxidation of the metal, or by heating titanic acid. (c) Titanium peroxide is obtained from solutions of titanic acid with hydrogen peroxide.

Grades: Technical.

Containers: Wooden kegs.

Uses: Titanium salts.

Fire hazard: None.

Railroad shipping regulations: None.

Titanium-Potassium Oxalate. See Potassium-titanium oxalate, page 507.

Titanium Sulfate* (a) $\text{Ti}_2(\text{SO}_4)_3$; (b) $\text{Ti}_2(\text{SO}_4)_2 \cdot 9\text{H}_2\text{O}$.

Color and properties: White, crystalline needles.

Constants: Specific gravity (a) 4.2252; (b) 2.766.

Soluble in hot water; very slightly soluble in cold water.

Derivation: By the action of sulfuric acid on titanium oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Textile mordant.

Fire hazard: None.

Railroad shipping regulations: None.

Titanium Tetrachloride* TiCl_4 .

Color and properties. Colorless liquid, fumes strongly in air.

Constants: Specific gravity 1.7604; melting-point -25°C ; boiling-point 130.4°C .

Soluble in dilute hydrochloric acid; decomposed by water.

Derivation: By heating titanium dioxide and carbon to redness in a current of chlorine.

Grades: Technical.

Containers: Glass bottles.

Uses: With potassium bitartrate in the textile industry as a mordant.

Fire hazard: None.

Railroad shipping regulations: None.

Toldine* (Di-para-aminoditolyl)

$(\text{C}_6\text{H}_3(\text{CH}_3)\text{NH}_2)_2$ 1:3:4.

Color and properties: Glistening plates.

Constants: Melting-point 128°C .

Soluble in alcohol and ether; sparingly soluble in water.

Derivation: By the reduction of ortho-nitrotoluene with zinc dust and caustic soda and conversion of the hydrazo-toluene by boiling with hydrochloric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Tolu Balsam Oil. See Tolu oil.

Tolu Oil* (Tolu balsam oil; Albahaca oil).

Color and properties: Yellow liquid; hyacinth-like odor.

Chief known constituents: A terpene, $\text{C}_{10}\text{H}_{16}$ and esters of cinnamic and benzoic acid.

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho-: Octahedral crystals; (b) Para-: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho-: oily liquid; (b) Para-: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Color and properties: Colorless, refractory, inflammable liquid; benzol-like odor.

Constants: Specific gravity 0.86137; melting-point $-94.5^{\circ}\text{C}.$; boiling-point $110.7^{\circ}\text{C}.$

Soluble in alcohol, benzol and ether; insoluble in water.

Derivation: (a) By fractional distillation of coal-tar light oil. (b) By extraction from illuminating gas.

Method of purification: Rectification.

Grades: Pure: Distillation, 100 per cent within $2^{\circ}\text{C}.$ Commercial: Distillation, not over 5 per cent at $100^{\circ}\text{C}.$; approximately and at least 90 per cent at $120^{\circ}\text{C}.$ Straw color: Distillation, at least 80 per cent at $120^{\circ}\text{C}.$

Containers: Iron drums; tank cars.

Uses: Organic preparations; benzoic acid; dyestuffs; perfumes; toluidines; tolidins; saccharing; explosives (T. N. T.).

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Toluolmonosulfonic Acid. See Acid toluenemonosulfonic.

Toluolsulfamide. See Toluenesulfamide.

Toluol Sulfochloride. See Toluene sulfochloride.

Toluolsulfoneamine. See Toluenesulfamide.

Toluol Sulfonechloride. See Toluene sulfochloride.

Toluylene. See Stilbene.

Toluylenediamine, Meta-* (Diaminotoluene) $\text{C}_6\text{H}_3(\text{CH}_3)(\text{NH}_2)_2$ 1:2:4.

Color and properties: Rhombic prisms.

Constants: Melting-point $99^{\circ}\text{C}.$; boiling-point $280^{\circ}\text{C}.$

Soluble in water, alcohol and ether.

Derivation: By the reduction of metadinitrotoluene with iron and hydrochloric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Toluylenediamine, Para-*

$\text{C}_6\text{H}_3(\text{CH}_3)(\text{NH}_2)_2$ 1:2:5.

Color and properties: Colorless, crystalline tablets.

Constants: Boiling-point $274^{\circ}\text{C}.$

Soluble in water.

Derivation: By reduction of aminoazotoluene with zinc and hydrochloric acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden Kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Toluylic Acid. See Acid toluic, Ortho-.

Tolyl-alpha-naphthylamine, Para-*

$\text{C}_{10}\text{H}_7\text{NH.C}_6\text{H}_4(\text{CH}_3)$ 1:4.

Color and properties: Colorless, short prisms.

Constants: Melting-point $79^{\circ}\text{C}.$

Soluble in alcohol and ether.

Derivation: By heating alpha-naphthol with para-toluidine.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Tolyl-beta-naphthylamine, Para-*

$\text{C}_{10}\text{H}_7\text{NH.C}_6\text{H}_4(\text{CH}_3)$ 1:4.

Color and properties: Short, colorless, crystalline plates.

Constants: Melting-point $103^{\circ}\text{C}.$

Sparingly soluble in alcohol.

Derivation: From beta-naphthol and para-toluidine by heating.

Grades: Technical.

Containers: Wooden kegs.

Uses: Dyestuffs.

Fire hazard: None.

Railroad shipping regulations: None.

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Tricalcium Ortho-phosphate. See Calcium phosphate, Tribasic.

Tricalcium Phosphate. See Calcium phosphate, Tribasic.

Tricarbimide. See Acid cyanuric.

Trichloroacetic Acid. See Acid trichloroacetic.

Trichloroacetic Aldehyde. See Chloral.

Trichloroacetic Acid. See Acid trichloroacetic.

Trichloroacetic Aldehyde. See Chloral.

Trichloroacetic Aldehyde, Hydrated. See Chloral hydrate.

Trichlorobutylidene Glycol. See Butylchloral hydrate.

Trichloroethane. See Ethylene monochlorochloride.

Trichloromethane. See Chloroform.

Trichloromethylchloroformate* (Diphosgene; Superpalite) ClCOOCCl_3 . A military poison gas used in the late war.

Trichloronitromethane. See Nitrotrichloromethane.

Tricyanic Acid. See Acid cyanuric.

Trihydroxybenzoic Acid. See Acid gallic.

Trihydrated Telluric Oxide. See Acid telluric.

Triiodomethane. See Iodoform.

Trimethylamine* $(\text{CH}_3)_3\text{N}$.
Color and properties: Colorless, liquefied gas; fishy, ammoniacal odor.
Constants: Specific gravity 0.662; boiling-point $3.2^\circ\text{--}3.8^\circ\text{C}$.
Soluble in water, alcohol and ether.

Derivation: By the interaction of methyl iodide and ammonia.

Method of purification: Crystallization.

Grades: Technical; 10 per cent solution; 33 per cent solution.

Containers: Steel cylinders.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: Green label.

Trimethylaminobenzene. See Cumidine.

Trimethylbenzene. See Cumene.

Trimethylbenzol. See Cumene.

Trimethylethylene. See Amylene.

Trimethylxanthine. See Caffeine.

Trinitrin. See Nitroglycerine.

Trinitrocellulose. See Nitrocellulose.

Trinitroglycerine. See Nitroglycerine.

Trinitrophenol. See Acid picric.

Trinitrotoluene* (T. N. T.; Trinitrotoluol; Methyltrinitrobenzene)

$\text{C}_6\text{H}_2\text{CH}_3(\text{NO}_2)_3$.

Color and properties: (a) Yellow, monoclinic needles.

| Constants: | (a) Alpha- | (b) Beta- | (c) Gamma |
|------------------|------------|-----------|-----------|
| Specific gravity | 2:4:6 | 2:3:4 | 2:4:5 |
| Melting-point | 1.654 | 1.62 | 1.62 |
| | 80.9°C | 112°C | 104°C |

Soluble in alcohol and ether; insoluble in water.

Derivation: By the nitration of toluol with mixed acid.

Method of purification: Washing.

Grades: Technical.

Containers: Iron canisters.

Uses: Explosive.

Fire hazard: Dangerous.

Railroad shipping regulations: Cannot be shipped by express.

Trinitrotoluol. See Trinitrotoluene.

Trional. See Sulfoneethylmethane.

Trioxybenzene. See Acid pyrogalllic.

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamide) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Trona.

Derivation: A mixture of sodium, potassium and boron salts occurring in lakes and lake deposits.

Found in California, Colorado, Nevada and Wyoming.

Uses: Recovery of potassium salts, borax, etc.

Tropacocaine Hydrochloride*

$C_{15}H_{19}NO_2 \cdot HCl$.

Color and properties: Crystalline alkaloid salt; poisonous.

Constants: Melting-point $271^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: From a variety of Erythroxylon coca.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Local anesthetic.

Fire hazard: None.

Railroad shipping regulations: None.

Tropine* $C_8H_{15}NO$.

Color and properties: White, crystalline alkaloid; very hygroscopic; poisonous.

Constants: Melting-point 61.2° - $63^{\circ}C$.

Soluble in water and ether; slightly soluble in ether.

Derivation: By heating atropine or hyoscyamine with barium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Tropine-Platinum Hydrochloride*

$(C_8H_{15}NO \cdot HCl)_2 \cdot PtCl_4$.

Color and properties: Orange-red monoclinic tablets; poisonous.

Constants: Melting-point 198° - $200^{\circ}C$.

Soluble in water; insoluble in alcohol.

Derivation: By the action of chloroplatinic acid on tropin.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

True Lavender. See Lavender, page 505.

Trumpet Weed. See Eupatorium purpureum.

Trypsin.*

Color and properties: Yellow to grayish-yellow powder; converts proteins and peptones into polypeptids and amino acids.

Derivation: An enzyme from pancreatic juice or the pancreas of animals.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine; pharmacy.

Fire hazard: None.

Railroad shipping regulations: None.

Tufa. See Travertine. Found in California, Utah and Washington.

Tuna Oil* (Tunny-fish oil).

Color and properties: Pale yellow to red-brown liquid; characteristic odor.

Constants: Iodine value 156.

Soluble in alcohol, ether, chloroform, benzene and carbon bisulfide.

Derivation: By expressing the livers of *Thynnus vulgaris*.

Method of purification: Filtration.

Grades: Crude; refined.

Containers: Wooden barrels.

Uses: Paints.

Fire hazard: None.

Railroad shipping regulations: None.

Tung Oil* (Chinese-wood oil; China-wood oil).

Color and properties: Yellow, drying oil. Jellies or solidifies when kept. Reputed to be poisonous.

Constants: Specific gravity 0.9360-0.9432; saponification value 193; iodine value 150-165; refractive index 1.5030.

Derivation: From the seeds of *Alcurites cordata*, a tree indigenous to China and Japan, by roasting, grinding and pressing.

Impurities: Tung oil, being expensive, is frequently adulterated with cottonseed oil, soya-bean oil, etc.

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

U

Uintahite. See Gilsonite.

Uintaite. See Gilsonite.

Ulexite (Cotton-ball). Natural hydrous borate of sodium and calcium probably $\text{Na}_2\text{O} \cdot 2\text{CaO} \cdot 5\text{B}_2\text{O}_3 \cdot 16\text{H}_2\text{O}$. Contains theoretically 43 per cent B_2O_3 . Found in California and Nevada.

Ulmus* (Elm; Slippery elm).

Color and properties: Flat pieces, externally light brown with dark brown patches; mucilaginous taste.

Derivation: Dried bark of *Ulmus fulva*, deprived of its periderm.

Habitat: Eastern and Central North America.

Grades: Technical; U. S. P.

Containers: Burlap bags; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Ultramarine* Essentially

$\text{Na}_4(\text{NaS}_3\text{Al})\text{Al}_2(\text{SiO}_4)_3$.

Color and properties: Dark blue powder or lumps.

Derivation: (a) Found in nature in Persia and Turkestan as the mineral *Lapis lazuli*. (b) Made artificially by heating a mixture of kaolin, soda ash, sodium sulfate, sulfur together with either coal or resin.

Grades: Technical.

Containers: Wooden kegs.

Uses: Paint pigment; artists' colors; paper manufacture; laundry blues, etc.

Fire hazard: None.

Railroad shipping regulations: None.

Ultramarine Yellow. See Barium chromate.

Umb.*

Color and properties: Brown powder containing ferric oxide together with silica, alumina, manganese and lime. (a) Raw umbel which is ground and then levigated. (b) Burnt umbel which is calcined at low heat.

Grades: Based on tinctorial power and iron content; the best come from Cyprus.

Containers: Wooden barrels.

Uses: Paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Unguentum, U. S. P. Ointment, a fatty base in which a drug or mixture of drugs is incorporated.

Uragoga. See Ipecac.

Uranii Nitras, U. S. P. See Uranium nitrate.

Uranine* (Uranine yellow)

$\text{Na}_2(\text{C}_{20}\text{H}_{10}\text{O}_5)$.

Color and properties: Yellowish-brown powder.

Soluble in water and alcohol.

Derivation: By treatment of fluorescein with sodium carbonate solution and crystallizing.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Dyeing silk and wool yellow; following the course of subterranean waters; detection of death.

Fire hazard: None.

Railroad shipping regulations: None.

Uranine Yellow. See Uranine.

Uraninite (Pitch blende). A complex uranium mineral containing also rare earths, radium, lead, helium and other elements. Found in Austria, Colorado, Connecticut and North Carolina.

Uranium* U

Color and properties: A heavy metallic element. Not found native. All uranium minerals contain radium. See Autunite, Carnotite, Fergusonite, Mackintoshite, Niverite, Pitch blende,

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Uranium Sulfate*

- (a) Uranous sulfate $\text{U}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$;
 (b) Uranyl sulfate $\text{UO}_2\text{SO}_4 \cdot 3\text{H}_2\text{O}$.
 Color and properties: (a) Green crystals. (b) Yellow crystals.

| | | |
|------------------|--|---------|
| Constants: | (a) | (b) |
| Specific gravity | .... | 3.280 " |
| Melting-point | Losses H_2O at 300°C} | .... |
| Boiling-point | Oxidizes. | .... |

- (a) Soluble in dilute acids; decomposes in water. (b) Soluble in water and concentrated hydrochloric acid.

Derivation: By the action of sulfuric acid on uranium dioxide

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Chemical analysis.

Fire hazard: None.

Railroad shipping regulations: None.

Uranium Trioxide. See Uranium oxides.

Uranium Yellow. See Sodium uranate.

Uranocircite. Natural, hydrous phosphate of uranium and barium $\text{Ba}_0.2\text{UO}_3\text{P}_2\text{O}_5 \cdot 8\text{H}_2\text{O}$. Found in South Dakota.

Uranophane. Natural hydrous silicate of uranium and calcium, $\text{CaO}_2\text{UO}_3 \cdot 2\text{SiO}_2 \cdot 6\text{H}_2\text{O}$. Found in North Carolina.

Uranospinite. Probably an arsenate of uranium and calcium corresponding to autunite, $\text{CaO}_2\text{UO}_3 \cdot \text{As}_2\text{O}_5 \cdot 8\text{H}_2\text{O}$. Found in Utah.

Uranous Oxide. See Uranium oxides.

Uranyl Acetate. See Uranium acetates.

Uranyl Chloride. See Uranium chloride.

Uranyl Nitrate. See Uranium nitrate.

Urao. Natural, hydrous sodium carbonate $3\text{Na}_2\text{O} \cdot 4\text{CO}_2 \cdot 5\text{H}_2\text{O}$.

Urea* (Carbamide) $\text{CO}(\text{NH}_2)_2$.

Color and properties: White crystals.

Constants: Specific gravity 1.323; melting-point 132°C .

Soluble in water, alcohol and benzol; slightly soluble in ether.

Derivation: (a) By heating ammonium cyanate. (b) By treating calcium cyanamide with dilute acids.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Medicine; stabilizing explosives; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Urease. See Enzymes, page 504.

Ureous Acid. See Xanthine.

Urethan* (Ethyl carbamate; Ethyl urethan) $\text{CO}(\text{NH}_2)\text{OC}_2\text{H}_5$.

Color and properties: Colorless crystals; faint, peculiar odor; saltpeter-like taste.

Constants: Specific gravity 0.9862; melting-point $48^\circ\text{--}50^\circ\text{C}$; boiling-point 180°C .

Soluble in water, alcohol and ether.

Derivation: By the interaction of urea and ethyl alcohol.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Uric Acid. See Acid uric.

Uric Oxide. See Acid uric.

Urner's Liquid Chloroacetic Acid. See Acid dichloroacetic.

Urotropin. See Hexamethylenetetramine.

Uva Ursi* (Bearberry).

Derivation: Dried leaves of *Arctostaphylos uva uris*.

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Valeriana, U. S. P., B. P. See Valerian.

Valerianæ Indiciæ Rhizoma, B. P. See Valerian.

Valerianic Acid. See Acid valeric, Iso.

Valeric Acid, Iso. See Acid valeric, Iso.

Valeric Acid, Normal. See Acid valeric, Normal.

Valeric Aldehyde. See Isovaleric aldehyde.

Validol (Menthol valerate).

Color and properties: Colorless liquid; mild pleasant odor; cooling, faintly bitter taste.

Soluble in menthol.

Derivation: By the action of valeric acid on menthol.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Validol Camphorated.

Color and properties: Colorless, thick liquid; cool faintly bitter taste.

Derivation: A mixture of validol with 10 per cent of camphor.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None

Valley Brown Ore. A local name for limonite or brown iron ore. Applied in Virginia to the comparatively pure high-grade ore found in the Cambro-Ordovician limestone which forms the Valley of Virginia. See Mountain brown ore.

Valonia.

Derivation: The acorn cups of an oak *Quercus aegilops*, native of Greece, Asia Minor and France. The cups are very large and are covered with

coarse hair or "beard" which is very rich in tannin. Good valonia contains 30 per cent tannin.

Grades: 65 per cent Tannin; solid.

Containers: Cups: Burlap bags. Extract: Wooden barrels.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Vanadic Acid. See Acid vanadic.

Vanadic Acid Anhydride. See Vanadium pentoxide.

Vanadic Acid, Meta-. See Acid vanadic.

Vanadic Acid, Ortho-. See Acid vanadic.

Vanadic Acid, Pyro-. See Acid vanadic.

Vanadic Anhydride. See Vanadium pentoxide.

Vanadinite. Natural lead chlorovanadate, $9\text{PbO} \cdot 3\text{V}_2\text{O}_5 \cdot \text{PbCl}_2$. Contains when pure 19.4 per cent V_2O_5 , but arsenic and phosphorus both replace vanadium, so that the mineral grades into mimetite, $3\text{Pb}_3\text{As}_2\text{O}_8 \cdot \text{PbCl}_2$ and into pyromorphite, $3\text{Pb}_3\text{P}_2\text{O}_8 \cdot \text{PbCl}_2$. Endlicheite is a variety of vanadinite, containing considerable arsenic. Arizona, Montana, Nevada, New Mexico.

Vanadium* V

Color and properties: Light gray, crystalline metal. It does not occur native but is found in the United States in the minerals carnotite, roscoelite, vanadinite, descloizite, volborthite, calciovolborthite, aegirite, etc. Arizona, Colorado, Montana, New Mexico, Utah. The principal source of the vanadium products of commerce is patronite, an impure vanadium sulfide mined in Peru.

Constants: Specific gravity 6.025.

Melting-point about 1730°C .

Soluble in mineral acids; insoluble in water.

Derivation: Pure vanadium has never

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamide) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

oxide and organic matter. Obtained from bog-earth, peat deposits or from others containing bituminous matter. Grades: Based on iron oxide content and tinctorial value. Containers: Wooden kegs. Uses: Pigment. Fire hazard: None. Railroad shipping regulations: None.

Vanilla Bean.

Derivation: Cured, full grown, but immature fruit of *Vanilla planifolia*. Habitat: Mexico; West Indies, Reunion, Ile de France and Seychelles. Grades: Technical; U. S. P. Containers: Bags; boxes. Uses: Confectionery; flavoring; medicine. Fire hazard: None. Railroad shipping regulations: None.

Vanilla Plant. See *Liatris*.

Vanillic Aldehyde. See *Vanillin*.

Vanillin* (Methylprotocatechuic aldehyde; Vanillic aldehyde)

$C_6H_5OHOCH_2CHO$.

Color and properties: Colorless prisms; pleasant aroma; vanilla taste.

Constants: Melting-point 80° - $81^{\circ}C$.; boiling-point $285^{\circ}C$.

Soluble in water, alcohol and ether.

Derivation: By the oxidation of isoeugenol or coniferyl alcohol.

Method of purification: Crystallization.

Grades: Technical; U. S. P.

Containers: Tins.

Uses: Perfumes; confectionery; flavoring; pharmacy; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Vanillinum, U. S. P. See *Vanillin*.

Varnish Oil. An oil obtained by the distillation of a gum resin and used in the manufacture of varnishes.

Vaseline. See *Petrolatum*.

Vegetable Glue. See *Glue, Vegetable*.

Vegetable Gum. See *Dextrin*.

Vegetable Mercury. See *Manaca*.

Vegetable Sulfur. See *Lycopodium*.

Vegetable Wax. See *Japan wax*.

Venetian Red.*

Derivation: A very pure form of iron oxide, obtained by calcining ferrous sulfate.

Grades: Based on coloring power and iron content.

Containers: Barrels.

Uses: Pigment; polishing compound.

Fire hazard: None.

Railroad shipping regulations: None.

Venice Turpentine. See *Turpentine, Venice*.

Veratrina, U. S. P. See *Veratrine*.

Veratrine* $C_{37}H_{53}NO_{11}$.

Color and properties: Colorless, crystalline alkaloid; very poisonous.

Constants: Melting-point $180^{\circ}C$.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By extraction from the seeds of *Asagraea officinalis*.

Method of purification: Crystallization.

Impurities: Cevadine.

Grades: Technical; U. S. P.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Veratrine Sulfate*

$(C_{32}H_{49}NO_9)_2 \cdot H_2SO_4$.

Color and properties: White to yellowish powder; poisonous.

Soluble in water and alcohol.

Derivation: By the action of sulfuric acid on veratrine.

Method of purification: Crystallization.

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Containers: Copper flasks; glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Viburnum Opulus* (Cramp bark; High cranberry; Cranberry tree; Water elder; Squaw bush; Snowball bush).

Derivation: Dried bark of *Viburnum opulus*.

Habitat: Europe, Asia and northern North America south to Pennsylvania.

Grades: Technical; U. S. P.

Containers: Burlap bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Viburnum Prunifolium* (Black haw; Sweet viburnum; Sheep-berry; Stag bush; Sloe-leaved viburnum).

Derivation: Dried bark of root of *Viburnum prunifolium*.

Habitat: United States.

Grades: Technical; U. S. P.; B. P.

Containers: Burlap bags.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Vichy Salts. See Sodium carbonate.

Victoria Green. Trade name for Malachite green.

Vienna Caustic. Potassium hydroxide with lime.

Vienna Paste. Potassium hydroxide with lime.

Vinasse. The residue obtained from beet sugar molasses fermentation, containing mineral salts.

Vincetoxicum (Swallow-wort; White swallow-wort).

Derivation: Root of *Vincetoxicum officinale*.

Habitat: Mountainous Europe.

Grades: Technical.

Containers: Bags.

Uses: Veterinary medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Vinegar. See Acid acetic.

Vinegar Naphtha. See Ethyl acetate.

Vinegar, Pyroligneous. See Acid pyroligneous.

Vinegar Salts. See Calcium acetate.

Vinegar, Wood. See Acid pyroligneous.

Vinum Antimoniale, B. P. Antimonial wine.

Vinum Aurantii, B. P. Orange wine.

Vinum Colchici, B. P. Colchicum wine.

Vinum Ferri, B. P. Iron wine.

Vinum Ferri Citratis, B. P. Wine of iron citrate.

Vinum Ipecacuanhæ, B. P. Wine of ipecac.

Vinum Quininae, B. P. Wine of quinine.

Vinum Xericum, B. P. Sherry wine.

Vinylbenzene. See Styrene.

Vinylbenzol. See Styrene.

Vinyl Trichloride. See Ethylene chloride.

Virginia Snake Root. See *Serpentaria*.

Virus Vaccinicum, U. S. P. Vaccine virus.

Vitreous Antimony. See Antimony sulfide.

Vitriol, Blue. See Copper sulfate.

Vitriol, Green. See Ferrous sulfate.

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Water, Chlorine. An aqueous solution of chlorine.

Water Elder. See *Viburnum opulus*.

Water Glass. See Sodium silicate.

Water, Lead. An aqueous solution of lead acetate.

Water, Lime. An aqueous solution of calcium hydroxide.

Water, Sulfuretted Hydrogen. An aqueous solution of hydrogen sulfide.

Waterproofing Salts. See Aluminum acetate.

Wattle.

Derivation: From the Australian wattles, *Acacia pycnantha*, *Acacia molliissima* and *Acacia binervata*.

Grades: Based on tannin content; 25 per cent extract.

Containers: Bags; barrels.

Uses: Tanning industry.

Fire hazard: None.

Railroad shipping regulations: None.

Wattle Bark Extract. See Wattle.

Wax Bay-berry. See Bay-berry wax.

Wax, Bee's. See Bees-wax

Wax-berry. See Myrica.

Wax, Carnauba. See Carnauba wax.

Wax, Ceresin. See Paraffin wax.

Wax, Chinese. See Chinese wax.

Wax, Insect. See Chinese wax.

Wax, Japan. See Japan wax.

Wax, Mineral. See Ceresin.

Wax, Montan. See Montan wax.

Wax, Myrtle. See Bay-berry wax.

Wax, Ozokerite. See Ozokerite.

Wax, Paraffin. See Paraffin wax.

Wax, Stearic Acid. See Acid stearic.

Wax, White, U. S. P. See Bees-wax.

Whale Oil* (Train oil; Sperm oil; Body oil).

Color and properties: Yellowish-brown, non-drying, fixed oil; strong fishy odor.

Constants: Specific gravity 0.925-0.930; saponification value 188-193; iodine value 120.

Soluble in alcohol, ether, benzol, chloroform and carbon bisulfide.

Derivation: By boiling the blubber of the Greenland or other whales, and skimming off the oil.

Method of purification: Filtration.

Grades: Technical.

Containers: Wooden barrels; tank cars.

Uses: Leather dressing; lubrication; tempering steel; soap-making; illumination.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Whetstone. A stone suitable for sharpening tools. Arkansas, Connecticut, Indiana, Massachusetts, Michigan, New Hampshire, Rhode Island, and Vermont.

White Acid. See Acid, White.

White Arsenic. See Arsenic trioxide.

White Bole. See Kaolin.

White, Charlton. See Lithopone.

White, Chinese. See Zinc oxide.

White Cinnamon. See *Canella alba*.

White, Griffith's. See Lithopone.

White Iron Pyrite. See Marcasite.

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Wood, Agatized. See Wood, Silicified.

Wood Alcohol. See Methyl alcohol.

Wood Naphtha. See Methyl alcohol.

Wood, Opalized. See Wood, Silicified.

Wood, Petrified. See Wood, Silicified.

Wood, Silicified (Petrified wood; Opalized wood; Agatized wood). A natural material composed of opal or chalcedony (agate) and formed by the replacement of wood by silica. The replacement of the woody matter by the silica takes place in such a way that the original form and structure of the wood is preserved. Arizona, California, Colorado, South Dakota, Utah and Wyoming.

Wood Spirit. See Methyl alcohol.

Wood-tar. See Tar, Wood.

Wood's Metal. See Metal, Fusible, Wood.

Wool-fat. See Lanum.

Wool-grease. See Degras.

Worm-grass. See Spigelia.

Wormseed. See Santonica.

Wormseed Oil, American. See Chenopodium oil.

Wormseed Oil, Levant.

Color and properties: A yellow, essential oil; penetrating, disagreeable odor.

Chief known constituent: Cineol.

Constants: Specific gravity 0.930.

Soluble in alcohol, ether, acetone, benzol, chloroform and carbon bisulfide.

Derivation: Distilled from the unexpanded flower heads of *Artemisia pauciflora*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Wormwood Oil.

Color and properties: The oil from the fresh herb has a dark green color, while that from the dry herb is yellowish-green or yellowish-brown; becomes dark brown with age; strong, somewhat unpleasant odor.

Chief known constituents: Thujone; phellandrene; thujyl alcohol.

Constants: Specific gravity 0.925-0.955; refractive index 1.460-1.470.

Soluble in alcohol, ether, acetone, benzol, chloroform and carbon bisulfide.

Derivation: Distilled from the leaves of *Artemisia absinthium*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Wulfenite. Natural lead molybdate, $PbMoO_4$. Calcium, chromium, copper and vanadium are sometimes constituents. Arizona, Massachusetts, Nevada, New Mexico, Pennsylvania and Utah.

Wurtzilite (Elaterite; Tabbyite; Æonite; Ægerite). An asphaltic mineral which is jet-black by reflected light and deep red in thin plates. It softens in hot water, toughens, and becomes more elastic. In a candle flame it softens and burns with a bright flame. It is practically insoluble in gasoline of 76°B., partly soluble in ether, carbon bisulfide and turpentine and less so in carbon tetrachloride. Utah.

Wurtzite. A natural zinc sulfide of the same composition as ~~aphalerite~~, ZnS , but hexagonal in its crystallization. Montana and Utah.

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Derivation: By fusing the xylenesulfonic acids with potassium hydroxide.
 Method of purification: Crystallization.
 Grades: Technical.
 Containers: Tins; wooden kegs.
 Uses: Organic synthesis.
 Fire hazard: None.
 Railroad shipping regulations: None.

Xylidine, Meta-* (Amino-meta-xylene; Aminodimethylbenzene)

$C_6H_3(CH_3)_2NH_2$.
 Color and properties: Colorless oil.
 Constants: Specific gravity 0.9184; boiling-point $215^{\circ}C$.
 Soluble in alcohol and ether; insoluble in water.
 Derivation: By the reduction of nitro-meta-xylene.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Dyestuffs.
 Fire hazard: None.
 Railroad shipping regulations: None.

Xylidine, Ortho-* (Aminodimethylbenzene; Amino-ortho-xylene)

$C_6H_3(NH_2)(CH_3)_2$.
 Color and properties: Yellow liquid; prone to darken on exposure to air and light.
 Constants: Specific gravity 0.981-0.984; boiling-point 212° - $215^{\circ}C$.
 Soluble in alcohol, ether and benzol; insoluble in water.
 Derivation: By the reduction of nitro-xylene with iron and hydrochloric acid.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Iron drums.
 Uses: Organic synthesis; dyestuffs.
 Fire hazard: None.
 Railroad shipping regulations: None.

Xylidine, Para-* (Amino-para-xylene; Aminodimethylbenzene)

$C_6H_3(CH_3)_2NH_2$.
 Color and properties: White, crystalline solid or oil.
 Constants: Specific gravity 0.980; melting-point $15^{\circ}C$; boiling-point $215^{\circ}C$.
 Soluble in alcohol and ether; insoluble in water.

Derivation: By the nitration and reduction of para-xylol.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Wooden barrels.
 Uses: Dyestuffs.
 Fire hazard: None.
 Railroad shipping regulations: None.

Xylidin. See Nitrocellulose.

Xylol, Meta-* (Xylene, Meta-; Meta-dimethylbenzene) $C_6H_4(CH_3)_2$.

Color and properties: Clear, colorless, mobile liquid; characteristic odor; inflammable.
 Constants: Specific gravity 0.8668; melting-point $-54^{\circ}C$; boiling-point $130^{\circ}C$.
 Soluble in alcohol and ether; insoluble in water.
 Derivation: By fractional distillation from crude xylol, obtained from solvent naphtha.
 Grades: Technical; pure.
 Containers: Iron drums; tank cars.
 Uses: Organic preparations; solvent; meta-xylidine; microscopy.
 Fire hazard: Dangerous.
 Railroad shipping regulations: None.

Xylol, Ortho-* (Xylene, Ortho-; Ortho-dimethylbenzene) $C_6H_4(CH_3)_2$.

Color and properties: Clear, colorless, mobile liquid; characteristic odor; inflammable.
 Constants: Specific gravity 0.876; melting-point $-28^{\circ}C$; boiling-point $142^{\circ}C$.
 Soluble in alcohol and ether; insoluble in water.
 Derivation: By fractional distillation from crude xylol, obtained from solvent naphtha.
 Method of purification: Rectification.
 Grades: Technical.
 Containers: Iron drums; tank cars.
 Uses: Organic preparations; solvent; ortho-xylidine; microscopy.
 Fire hazard: Dangerous.
 Railroad shipping regulations: None.

Xylol, Para-* (Xylene, Para-; Para-dimethylbenzene) $C_6H_4(CH_3)_2$.

Color and properties: Clear, colorless,

Constants: Specific gravity 0.945-1.09
Soluble in alcohol, ether, chloroform and carbon bisulfide.
Derivation: From tolu balsam by distillation.
Method of purification: Rectification.
Grades: Technical.
Containers: Glass bottles.
Uses: Perfumery; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene. See Toluol.

Toluenemonosulfonic Acid. See Acid toluenemonosulfonic.

Toluenesulfamide* (Toluenesulfonamine) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{NH}_2$.
Color and properties: (a) Ortho: Octahedral crystals; (b) Para: White leaflets.
Constants: Melting-point: (a) 155°C ; (b) 137°C .
Soluble in alcohol; very slightly soluble in water.
Derivation: By the action of chlorosulfonic acid on ortho- and para-toluidine.
Method of purification: Crystallization.
Grades: Technical.
Containers: Wooden kegs.
Uses: Saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluene Sulfochloride* (Toluene sulfonechloride) $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_2\text{Cl}$.
Color and properties: (a) Ortho: oily liquid; (b) Para: rhombic crystals.
Constants: Melting-point (b) 69°C ; boiling-point: (b) $145^\circ\text{--}146^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By the action of chlorosulfonic acid on toluol.
Grades: Technical.
Containers: Wooden kegs.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluic Acid. See Acid toluic, Meta-, Ortho- and Para-.

Toluidine, Meta-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Reddish-brown liquid.
Constants: Specific gravity 0.996; melting-point -13°C ; boiling-point 203°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation: By the reduction of meta-nitrobenzylidene chloride with zinc at a low temperature.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Ortho-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: Light yellow liquid; becomes reddish-brown on exposure to air and light; volatile with steam.
Constants: Specific gravity 1.0037; melting-point -21°C ; boiling-point 199.7°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of ortho-nitrotoluene or obtained mixed with para-toluidine by the reduction of crude nitrotoluene.
Impurities: Para-toluidine; aniline.
Grades: Technical.
Containers: Iron drums.
Uses: Dyestuffs; saccharine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluidine, Para-* $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$.
Color and properties: White, lustrous plates or leaflets.
Constants: Specific gravity 0.973; melting-point 45°C ; boiling-point 200.3°C .
Soluble in alcohol and ether; very slightly soluble in water.
Derivation: By the reduction of para-nitrotoluene with iron and hydrochloric acid.
Grades: Technical.
Containers: Wooden casks.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Toluol* (Toluene, Methylbenzene, Phenylmethane) $\text{CH}_3\text{C}_6\text{H}_5$.

Yellow Puccoon. See Hydrastis.

Yellow Saunders. Santalum album.

Yellow, Uranium. See Sodium uranate.

Yellow Uranium Oxide. See Sodium uranate.

Yellow Wood. See Xanthoxylum.

Yerba Maté. The leaves of a tree found in Paraguay. Used in South America in the same manner as tea, for a beverage.

Yerba Santa. See Eriodictyon.

Ylang-ylang Oil.

Color and properties: Pale yellow, liquid oil, noted for its delicious perfume.

Chief known constituents: Linalool, para-cresolmethyl ether, benzyl acetate and benzoate, isoeugenol and methyl anthranilate.

Constants. Specific gravity 0.911-0.958; saponification value 90-138; refractive index 1.4747-1.4940; optical rotation -27 to -49.7.

Soluble in alcohol, ether, benzol, acetone and chloroform.

Derivation: Distilled in Manila from the flowers of *Cananga odorata*.

Method of purification: Rectification.

Grades: According to odor. An inferior grade is distilled in Java from some species of *Cananga*, and is known as *Cananga oil* (qv).

Containers: Copper flasks; glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Yohimbine* $C_{23}H_{32}N_2O_4$.

Color and properties: Glistening, needle-like alkaloid; poisonous.

Constants: Melting-point 231°C.

Soluble in alcohol and ether; very slightly soluble in water.

Derivation: By extraction from the bark of *Corynanthe yohimbe*.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Young Fustic.

Derivation: The heartwood of a sumac, *Rhus cotinus*; a native of Spain, Italy, Hungary and the Levant.

Grades: Technical.

Containers: Chips: Burlap bags. Extract: Wooden barrels.

Uses: Leather industry.

Fire hazard: None.

Railroad shipping regulations: None.

Yttria. See Yttrium oxide.

Yttrialite. A natural silicate of thorium and the yttrium metals chiefly, but it contains also uranium and other elements in small quantity. Texas.

Yttrium* Yt.

Color and properties: Dark gray metal. Constants: Specific gravity 3.80; melting-point 1250°C.

Soluble in dilute acids and potassium hydroxide solution; decomposes water.

Derivation: From yttrium oxide by electrolysis.

Impurities: Rare earths.

Grades: Technical.

Containers: Wooden kegs.

Uses: Incandescent gas mantles.

Fire hazard: None.

Railroad shipping regulations: None.

Yttrium Acetate* $Yt(C_2H_3O_2)_3 \cdot 8H_2O$.

Color and properties: Colorless crystals.

Soluble in water.

Derivation: By the action of acetic acid on yttrium oxide.

Method of purification: Crystallization.

Impurities: Rare earths.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Yttrium Carbonate* $Yt_2(CO_3)_3 \cdot 3H_2O$.

Color and properties: Reddish-white to white powder.

Soluble in acids; insoluble in water, alcohol and ether.

Derivation: By the interaction of solutions of yttrium chloride and sodium carbonate.

Impurities: Erbium salts.

Grades: Technical.

Containers: Wooden kegs.

Uses: Incandescent gas mantles.

Fire hazard: None.

Railroad shipping regulations: None.

Yttrium Chloride* $\text{YtCl}_3 \cdot 6\text{H}_2\text{O}$.

Color and properties: Reddish-white, transparent, deliquescent prisms.

Constants: Specific gravity 2.575; melting-point: Decomposes at 100°C .

Soluble in water; sparingly soluble in alcohol; insoluble in ether.

Derivation: By the action of hydrochloric acid on yttrium oxide.

Method of purification: Crystallization.

Impurities: Erbium salts.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Yttrium Nitrate* (a) $\text{Yt}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$;

(b) $\text{Yt}(\text{NO}_3)_3 \cdot 4\text{H}_2\text{O}$.

Color and properties: Reddish-white crystals.

Soluble in water, alcohol and nitric acid.

Derivation: By the action of nitric acid on monazite sand.

Method of purification: Crystallization.

Impurities: Rare earths.

Grades: Technical.

Containers: Glass bottles.

Uses: Production of yttrium oxide.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Yttrium Oxide* Yt_2O_3

Color and properties: Yellowish-white powder.

Constants: Specific gravity 5.35.

Soluble in dilute acids; insoluble in water.

Derivation: By the ignition of yttrium nitrate.

Impurities: Rare earths.

Grades: Technical.

Containers: Wooden kegs.

Uses: Incandescent gas mantles.

Fire hazard: None.

Railroad shipping regulations: None.

Yttrium Sulfate* $\text{Yt}_2(\text{SO}_4)_3 \cdot 8\text{H}_2\text{O}$.

Color and properties: Small reddish-white, monosymmetric crystals.

Constants: Specific gravity 2.558.

Soluble in concentrated sulfuric acid; sparingly soluble in water; insoluble in alkalis.

Derivation: By the action of sulfuric acid on monazite sand.

Method of purification: Crystallization.

Grades: C. P.

Containers: Glass bottles.

Uses: Reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Z

Zaffre.*

Derivation: A crude cobalt oxide, made by roasting smaltite, cobaltite, or cobalt-nickel pyrites.

Grades: Technical.

Containers: Wooden kegs.

Uses: Blue pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Zaratite. A natural, massive, vitreous emerald-green hydrous nickel carbonate, $\text{NiCO}_3 \cdot 2\text{Ni}(\text{OH})_2 \cdot 4\text{H}_2\text{O}$. Occurs usually in an incrustation. Maryland.

Zea* (Corn-silk; Stigmata maydis).

Fresh styles and stigmas of Zea mays.

Habitat: U. S. and Hungary.

Grades: Technical; U. S. P.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zedoary Oil.

Color and properties: Pale-yellow, essential oil; camphor-like odor.

Chief known constituent: Cineol.

Constants: Specific gravity 0.992-1.010.

Soluble in alcohol, ether, acetone, chloroform and carbon bisulfide.

Derivation: Distilled from the rhizome of *Curcuma zedoaria*.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zentralin. See Dimethyldiphenylurea.

Zeolites. A group of minerals occurring in cracks and cavities of igneous rocks, especially the more basic lavas. Zeolites are hydrous silicates of aluminum with either sodium or calcium or both, and rarely barium or strontium. Before the blowpipe most of the zeolites fuse readily and with strong intumescence, whence their name, derived from the Greek, of "boiling stone." Artificial zeolites are used in purifying water.

Zibeth.* See Civet.

Zinc* Zn.

Color and properties: Shining, white metal; bluish-gray, luster; or gray powder. Not found native. See Calamine, Franklinite, Hydrozincite, Nicholsonite, Smithsonite, Sphalerite, Willemite, Wurtzite, Zincite.

Constants: Specific gravity 7.142; melting-point 419°C .; boiling-point 918°C . Soluble in acids and alkalis; insoluble in water.

Derivation: By roasting zinc blende in a reverberatory furnace, and collection by distillation. Obtained also electrolytically from zinc concentrates.

Impurities: Lead; copper; silver.

Grades: U. S. P.; Electrolytic: 99.92 per cent; Extra High Grade 99.95 per

cent. Pigs; bars; sheets; wire; granules; dust or powder; etc.

Containers: Wooden barrels; boxes.

Uses: Metallurgy; organic synthesis; zinc salts; galvanizing; lining packing cases; boiler plates.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Acetate* $\text{Zn}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: White, monoclinic, crystalline plates; pearly luster.

Constants: Specific gravity 1.72; melting-point $235^{\circ}\text{--}257^{\circ}\text{C}$.

Soluble in water.

Derivation: By the action of acetic acid on zinc oxide.

Method of purification: Crystallization.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden kegs.

Uses: Medicine; preserving wood; mordant in dyeing.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Alum. Aluminum-Zinc sulfate.

Zinc-Ammonium Chloride*

$\text{ZnCl}_2 \cdot 5\text{NH}_3 \cdot \text{H}_2\text{O}$.

Color and properties: White powder.

Grades: Technical.

Containers: Tins.

Uses: Welding; soldering flux.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Bichromate* (Zinc dichromate)

ZnCr_2O_7 .

Color and properties: Orange-yellow powder.

Soluble in acids; insoluble in water, alcohol and ether.

Derivation: By the action of chromic acid on zinc hydroxide.

Grades: Technical.

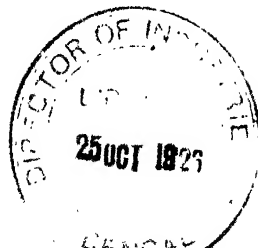
Containers: Wooden kegs.

Uses: Pigments.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Zinc Blende. See Sphalerite.



Zinc Bloom. See Hydrozincite.

Zinc Borate* ZnBO_3 .

Color and properties: White, amorphous powder.

Soluble in water.

Derivation: By the fusion of zinc oxid, potassium bifluoride and boron oxide.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Bromate $\text{Zn}(\text{BrO}_3)_2$.

Color and properties: White, deliquescent powder.

Constants: Specific gravity 2.566; melting-point 100°C .

Derivation: By the interaction of barium bromate and zinc sulfate, with subsequent crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Bromide* ZnBr_2 .

Color and properties: White, hygroscopic, crystalline powder.

Constants: Specific gravity 4.210; melting-point 394°C ; boiling-point 650°C .

Soluble in water, alcohol and ether.

Derivation: By the interaction of solutions of barium bromide and zinc sulfate, with subsequent crystallization.

Method of Purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc, Butter of. See Zinc chloride.

Zinc Carbolate. See Zinc phenate.

Zinc Carbonate* ZnCO_3 .

Color and properties: White, crystalline powder.

Constants: Specific gravity 4.42-4.45; melting-point: Loses CO_2 at 300°C .

Soluble in acids, alkalis and ammonium salt solutions; insoluble in water.

Derivation: (a) By grinding the mineral smithsonite; (b) By the action of sodium bicarbonate on a solution of a zinc salt.

Method of purification: Crystallization.

Impurities: Zinc oxide; zinc hydroxide.

Grades: Technical.

Containers: Wooden barrels; tins.

Uses: Medicine; pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Carbonate, Precipitated* (Zinc subcarbonate) $2\text{ZnCO}_3 \cdot 3\text{Zn}(\text{OH})_2$.

Color and properties: Impalpable, white powder.

Soluble in dilute acids, ammonium hydroxide and ammonium carbonate solution; insoluble in water and alcohol.

Derivation: By the action of sodium carbonate on a solution of a zinc salt.

Impurities: Zinc oxide.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden barrels; tins.

Uses: Medicine; pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Chlorate* $\text{Zn}(\text{ClO}_3)_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: Colorless, very deliquescent crystals. Keep well stoppered.

Constants: Melting-point 60°C .

Soluble in water and alcohol.

Derivation: By the interaction of zinc sulfate and barium chlorate, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles; iron drums.

Uses: Oxidizing agent.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Zinc Chloride* (Butter of zinc) ZnCl_2 .

Color and properties: White, granular, deliquescent crystals; poisonous.

Keep well stoppered.

Constants: Specific gravity 2.91; melting-point 262°C ; boiling-point 730°C .

Soluble in water, alcohol and ether.
Derivation: By the action of hydrochloric acid on zinc, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical; U. S. P.; D. P.

Containers: Iron drums; glass bottles.
Uses: Medicine; embalming; wood preservation; dentifrices.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Chloroiodide.* A mixture of zinc chloride and iodide.

Color and properties: White powder.

Soluble in water.

Containers: Glass bottles.

Grades: Technical.

Uses: Disinfectant.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Chromate* (Zinc yellow; Buttercup yellow) $\text{ZnCrO}_4 \cdot 7\text{H}_2\text{O}$.

Color and properties: Yellow, crystalline powder.

Soluble in acids.

Derivation: By the action of chromic acid on zinc hydroxide.

Grades: Technical.

Containers: Kegs.

Uses: Paint pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Chrysophanate.*

Color and properties: Brownish-red powder.

Soluble in alkaline solutions.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Citrate* $\text{Zn}_3(\text{C}_6\text{H}_5\text{O}_7)_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: White, amorphous powder.

Slightly soluble in water.

Derivation: By the action of citric acid on zinc hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Cyanide* $\text{Zn}(\text{CN})_2$.

Color and properties: White powder; poisonous.

Constants: Melting-point: Decomposes. Soluble in dilute mineral acids; insoluble in water and alcohol.

Derivation: By precipitation of a solution of zinc sulfate or chloride with potassium cyanide.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Dichromate. See Zinc bichromate.

Zinc Dust. See Zinc.

Zinc Ethyl* $\text{Zn}(\text{C}_2\text{H}_5)_2$.

Color and properties: Colorless liquid; takes fire on contact with air.

Constants: Specific gravity 1.18; boiling-point 118°C .

Decomposes in water.

Derivation: By the action of ethyl iodide on zinc and sodium-zinc.

Grades: Technical.

Containers: Steel cylinders.

Uses: Organic synthesis.

Fire hazard: Dangerous.

Railroad shipping regulations: Red label.

Zinc Ethylsulfate*

$\text{Zn}(\text{C}_2\text{H}_5)_2 \cdot \text{SO}_4 \cdot 2\text{H}_2\text{O}$.

Color and properties: Clear, colorless, hygroscopic, crystalline leaflets.

Keep well stoppered.

Soluble in water and alcohol.

Derivation: By the interaction of zinc hydroxide and diethyl sulfate.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Ferrocyanide* $\text{Zn}_2\text{Fe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}$.

Color and properties: White powder.

Soluble in ammonium hydroxide; in-

soluble in water and hydrochloric acid.

Derivation: By the interaction of zinc sulfate and potassium ferrocyanide.

Grades: Technical.

Containers: Glass bottles; boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc, Flowers of. See Zinc oxide.

Zinc Fluoride* ZnF_2 .

Color and properties: White powder.

Constants: Specific gravity 4.612; melting-point 734°C .

Soluble in hot acids; slightly soluble in water; insoluble in alcohol.

Derivation: (a) By the action of hydrofluoric acid on zinc hydroxide; (b) By the addition of sodium fluoride to a solution of zinc acetate.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Ceramics.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Formate* $\text{Zn}(\text{CHO}_2)_2 \cdot 2\text{H}_2\text{O}$.

Color and properties: White crystals.

Soluble in water; insoluble in alcohol.

Derivation: By the action of formic acid on zinc hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Gallate. See Zinc subgallate.

Zinc Glycerinophosphate. See Zinc glycerophosphate.

Zinc Glycerophosphate* (Zinc glycerinophosphate)

$\text{C}_8\text{H}_5(\text{OH})_2\text{OPO}_3\text{Zn}$.

Color and properties: White, amorphous powder.

Soluble in water; insoluble in alcohol and ether.

Derivation: By the action of glycerophosphoric acid on zinc hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Hypophosphite*

$\text{Zn}(\text{H}_2\text{PO}_2)_2 \cdot \text{H}_2\text{O}$.

Color and properties: Colorless, hygroscopic crystals. Keep well stoppered.

Soluble in water and alkalis.

Derivation: By the action of hypophosphoric acid on zinc hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Iodate* $\text{Zn}(\text{IO}_3)_2$.

Color and properties: White, crystalline powder.

Soluble in nitric acid and alkalis; very slightly soluble in water.

Derivation: By the interaction of barium iodate and zinc sulfate, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Iodide* ZnI_2 .

Color and properties: Hygroscopic, white, crystalline powder; sharp, saline taste. Keep well stoppered.

Constants: Specific gravity 4.696; melting-point 446°C ; boiling-point 624°C .

Soluble in water, alcohol and alkalis.

Derivation: By the interaction of barium iodide and zinc sulfate, with subsequent crystallization.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Lactate* $\text{Zn}(\text{C}_3\text{H}_5\text{O}_3)_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: White crystals. Soluble in water.

Derivation: By the action of lactic acid on zinc hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Malate* $\text{ZnC}_4\text{H}_4\text{O}_5 \cdot 3\text{H}_2\text{O}$.

Color and properties: White, crystalline powder. Soluble in water.

Derivation: By the action of malic acid on zinc hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Nitrate* $\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: Colorless lumps or crystals.

• Constants: Specific gravity 2.065; melting-point 36.4°C ; boiling-point 131°C . Soluble in water and alcohol.

• Derivation: By the action of nitric acid on zinc or zinc oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Medicine.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Zinc Oleate* $\text{Zn}(\text{C}_{18}\text{H}_{32}\text{O}_2)_2$.

Color and properties: Dry, white, greasy, granular powder.

Soluble in alcohol, ether, carbon bisulfide and benzene; insoluble in water.

Derivation: By the interaction of solutions of zinc acetate and sodium oleate.

Grades: Technical.

Containers: Tins; wooden kegs; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Ore. See Calamine, Smithsonite, Franklinite and Zincite.

Zinc Ortho-phosphate. See Zinc phosphate.

Zinc Oxalate* $\text{ZnC}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$.

Color and properties: White powder.

Constants: Specific gravity 2.582.

Soluble in acids and alkalis; slightly soluble in water.

Derivation: By the interaction of zinc sulfate and sodium oxalate.

Grades: Technical.

Containers: Boxes.

Uses: Zinc oxide; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Oxide* (Chinese white, Zinc white) ZnO .

Color and properties: Amorphous, white powder; absorbs carbon dioxide from the air.

Constants: Specific gravity 5.78.

Soluble in acids; insoluble in water and alcohol.

Derivation: (a) By distillation of zinc or zinc ore mixed with coke in fire-clay retorts, passing the fumes into a flue through which air is drawn. The hot zinc fumes ignite and burn to the oxide which is collected in bags. (b) By heating zinc carbonate.

Impurities: Zinc carbonate.

Grades: Technical; U. S. P.; B. P.

Containers: Wooden kegs; glass bottles.

Uses: Paint pigment; medicine; zinc salts; rubber industry.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Oxide, Red. See Zincite.

Zinc Perborate* Probably $\text{ZnBO}_3 \cdot x\text{H}_2\text{O}$.

Color and properties: Amorphous, white powder.

Insoluble in water.

Derivation: By the action of boric acid on zinc hydroxide.

Grades: Technical.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Zinc Permanganate* $\text{Zn}(\text{MnO}_4)_2 \cdot 2\text{H}_2\text{O}$.
Color and properties: Violet-brown or black, hygroscopic crystals.

Soluble in water and acids; decomposes in alcohol.

Derivation: By roasting zinc carbonate and zinc nitrate with manganese dioxide.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Medicine; oxidizing agent.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Zinc Peroxide* ZnO_2 .

Color and properties: White powder. Decomposes in acids; insoluble in water.

Derivation: By the action of barium peroxide on zinc sulfate solution, followed by filtration.

Impurities: Zinc oxide.

Grades: Technical.

Containers: Tins; iron drums; glass bottles.

Uses: Medicine; bactericide.

Fire hazard: Dangerous.

Railroad shipping regulations: Yellow label.

Zinc Phenate* (Zinc carbolate; Zinc phenolate) $\text{Zn}(\text{C}_6\text{H}_5\text{O})_2$.

Color and properties: White powder. Soluble in alcohol; slightly soluble in water.

Derivation: By heating zinc hydroxide with phenol and extracting with alcohol.

Method of purification: Recrystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Phenolate. See Zinc phenate.

Zinc Phenolsulfonate* (Zinc sulfophenate; Zinc sulfocarbolate)
 $\text{Zn}(\text{C}_6\text{H}_5\text{SO}_4)_2 \cdot 8\text{H}_2\text{O}$.

Color and properties: Clear, colorless, crystals or fine white powder.

Slightly soluble in water and alcohol.

Derivation: By heating zinc hydroxide with phenol sulfate.

Method of purification: Crystallization.

Impurities: Ortho-compound.

Grades: Technical; U. S. P.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Phosphate* (Zinc ortho-phosphate; Zinc phosphate, Tribasic)

$\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$.

Color and properties: White powder.

Constants: Specific gravity 2.76-2.85.

Soluble in acids and ammonium hydroxide; insoluble in water.

Derivation: By the interaction of zinc sulfate and trisodium phosphate.

Grades: Technical.

Containers: Boxes; wooden kegs; glass bottles.

Uses: Medicine; dental cements.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Phosphate, Tribasic. See Zinc phosphate

Zinc Phosphide* Zn_3P_2 .

Color and properties: Dark gray, gritty powder.

Constants: Specific gravity 4.55.

Soluble in dilute acids; insoluble in water.

Derivation: By passing phosphine into a solution of zinc sulfate.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Phosphite* $\text{ZnHPO}_3 \cdot 2\frac{1}{2}\text{H}_2\text{O}$.

Color and properties: Granular, crystalline powder.

Soluble in cold water; insoluble in hot water.

Derivation: By the action of hypophosphorous acid on zinc hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

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Zinc Picrate* (Zinc picronitrate)

$\text{Zn}(\text{C}_6\text{H}_2(\text{NO}_2)_3\text{O})_2 \cdot 8\text{H}_2\text{O}$.

Color and properties: Yellow, crystalline powder, explosive.

Soluble in water.

Derivation: By the action of picric acid on a solution of a zinc salt.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: Dangerous

Railroad shipping regulations: Cannot be shipped by express.

Zinc Picronitrate. See Zinc picrate.

Zinc Powder. Finely divided metallic zinc. See Zinc.

Zinc Pyrophosphate* $\text{Zn}_2\text{P}_2\text{O}_7$.

Color and properties: White powder.

Soluble in acids and alkalis; insoluble in water.

Derivation: By heating a soluble zinc salt with ammonium phosphate.

Grades: Technical.

Containers: Wooden kegs.

Uses: Pigment.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Rhodanide. See Zinc sulfocyanate.

Zinc Salicylate*

$\text{Zn}(\text{C}_6\text{H}_4\text{COO})_2 \cdot 3\text{H}_2\text{O}$.

Color and properties: White, crystalline needles.

Soluble in water and alcohol.

Derivation: By heating zinc hydroxide and salicylic acid.

Method of purification: Crystallization.

Grades: Technical.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Stearate* $\text{Zn}(\text{C}_{18}\text{H}_{35}\text{O}_2)_2$.

Color and properties: White, agglutinating powder.

Soluble in acids; insoluble in water, alcohol and ether.

Derivation: By the action of sodium stearate on a solution of zinc sulfate.

Grades: Technical; U. S. P.

Containers: Tins; wooden kegs; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Subcarbonate. See Zinc carbonate, Precipitated.

Zinc Subgallate* (Zinc gallate). A mixture of 44 per cent zinc oxide and 56 per cent gallic acid.

Color and properties: Greenish-gray, neutral, odorless powder.

Insoluble in water, alcohol and ether.

Grades: Technical.

Containers: Glass bottles; tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Sulfate* (White vitriol; Zinc vitriol) $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$.

Color and properties: Colorless crystals; efflorescent in air. Keep well stoppered.

Constants: Specific gravity 1.9661; melting-point 50°C .

Soluble in water; insoluble in alcohol.

Derivation: By the action of sulfuric acid on zinc or zinc oxide.

Method of purification: Crystallization.

Impurities: Iron and lead salts.

Grades: Technical; U. S. P.; B. P.

Containers: Glass bottles; barrels.

Uses: Medicine; mordant in calico printing; paint pigment; preserving wood and skins; manufacture of lithopone.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Sulfide* $\text{ZnS} \cdot \text{H}_2\text{O}$.

Color and properties: Yellowish, white powder.

Constants: Specific gravity 3.98; melting-point 1049°C .; boiling-point: Sublimes at 1180°C .

Soluble in acids; insoluble in water.

Derivation: By passing hydrogen sulfide gas into a solution of a zinc salt.

Grades: Technical.

Containers: Wooden barrels.

Uses: Paint pigments.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Sulfite* $\text{ZnSO}_3 \cdot 2\text{H}_2\text{O}$.

Color and properties: White, crystalline powder; absorbs oxygen from the air.

Soluble in sulfurous acid; insoluble in cold water and alcohol; decomposes in hot water.

Derivation: By the action of sulfurous acid on zinc hydroxide.

Method of purification: Crystallization.

Impurities: Zinc sulfate.

Grades: Technical; C. P.

Containers: Glass bottles; tins.

Uses: Medicine; preservative for anatomical specimens.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Sulfocyanate* (Zinc rhodanide; Zinc sulfocyanide) $\text{Zn}(\text{CNS})_2$.

Color and properties: White powder. Soluble in water, alcohol and ammonium hydroxide.

Derivation: By the interaction of zinc hydroxide and ammonium sulfocyanate.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Sulfocyanide. See Zinc sulfocyanate.**Zinc-Tin Amalgam*.**

Composed of Zinc 25 per cent; Tin 25 per cent; Mercury 50 per cent.

Grades: Technical.

Containers: Glass bottles.

Uses: Electrical machines; dental cement.

Fire hazard: None.

Railroad shipping regulations: None.

Zinc Vitriol. See Zinc sulfate.

Zinc White. See Zinc oxide.

Zinc Yellow. See Zinc chromate.

Zinci Acetas, U. S. P., B. P. See Zinc acetate.

Zinci Carbonas, B. P. See Zinc carbonate, Precipitated.

Zinci Carbonas Praecipitatus, U. S. P. See Zinc carbonate, Precipitated.

Zinci Chloridum, U. S. P., B. P. See Zinc chloride.

Zinci Oleastearate, B. P. Zinc oleostearate.

Zinci Oxidum, U. S. P., B. P. See Zinc oxide.

Zinci Phenolsulphonas, U. S. P. See Zinc phenolsulfonate.

Zinci Stearas, U. S. P. See Zinc stearate.

Zinci Sulphas, U. S. P., B. P. See Zinc sulfate.

Zinci Valeras, U. S. P. Zinc valerianate.

Zinci Valerianas, B. P. Zinc valerianate.

Zincite (Zinc oxide, Red). Natural zinc oxide, ZnO . Contains 80.3 per cent zinc. New Jersey.

Zincum, U. S. P. See Zinc.

Zingiber, U. S. P., B. P. See Ginger, page 505.

Zircon. Natural zirconium silicate, ZrSiO_4 . When clear and orange-col-

ored it is used for the gem known as hyacinth. New Jersey, New York, North Carolina, Oregon, Texas and Virginia.

Zirconia. See Zirconium oxide.

Zirconium Anhydride. See Zirconium oxide.

Zirconium* Zr.

Color and properties: Hard, lustrous, grayish, crystalline scales.

Constants: Specific gravity 4.15-6.40; melting-point 1500°C - 2350°C .

Soluble in hot acids; insoluble in water and cold acids.

Derivation: By the reduction of the oxide.

Grades: Technical.

Containers: Glass bottles; wooden kegs.

Uses: Zirconium compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Acetate, Basic*

$\text{Zr}(\text{C}_2\text{H}_3\text{O}_2)_3 \cdot \text{OH}$.

Color and properties: White crystals. Soluble in water.

Derivation: By the action of acetic acid on zirconium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Weighting silk.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Carbide* ZrC_2 .

Soluble in acids; decomposes in water.

Derivation: By heating zirconium oxide and coke in an electric furnace.

Grades: Technical.

Containers: Iron drums.

Uses: Incandescent filaments; abrasive.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Carbonate, Basic*

$3\text{ZrO}_2 \cdot \text{CO}_2 \cdot 6\text{H}_2\text{O}$.

Color and properties: White, amorphous powder.

Soluble in acids; insoluble in water.

Derivation: By adding sodium carbonate to a solution of zirconium salt.

Grades: Technical.

Containers: Glass bottles; wooden kegs.

Uses: Zirconium oxide.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Chloride* (Zirconium tetrachloride) ZrCl_4 .

Color and properties: White, lustrous crystals.

Constants: Boiling-point 400°C .

Soluble in alcohol; decomposes in water.

Derivation: By the action of hydrochloric acid on zirconium hydroxide.

Grades: Technical.

Containers: Glass bottles.

Uses: Analytical chemistry.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Chloride, Basic. See Zirconium oxychloride.

Zirconium Hydroxide* $\text{Zr}(\text{OH})_4$

Color and properties: White, bulky, amorphous powder.

Constants. Specific gravity 3.25; melting point: Loses $2\text{H}_2\text{O}$ at 550°C .

Soluble in dilute mineral acids; insoluble in water and alkalis.

Derivation: By the action of a solution of sodium hydroxide on a solution of a zirconium salt.

Grades: Technical.

Containers: Wooden kegs; glass bottles.

Uses: Zirconium compounds.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Nitrate* $\text{Zr}(\text{NO}_3)_4 \cdot 5\text{H}_2\text{O}$.

Color and properties: White crystals.

Constants: Melting-point: Decomposes at 100°C .

Soluble in water.

Derivation: By the action of nitric acid on zirconium oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Wooden kegs.

Uses: Food preservative.
Fire hazard: Dangerous.
Railroad shipping regulations: Yellow label.

Zirconium Ortho-phosphate. See Zirconium phosphate.

Zirconium Oxide* (Zirconia; Zirconic anhydride) ZrO_2 .

Color and properties: Heavy, white, amorphous powder.

Constants: Specific gravity 5.0; melting-point 2500°C .

Soluble in nitric acid; insoluble in water, hydrochloric acid and sulfuric acid.

Derivation: By heating zirconium hydroxide.

Grades: Technical.

Containers: Wooden kegs.

Uses: Incandescent gas mantles; Roentgen ray photography; metallurgy; abrasive; substitute for calcium oxide in calcium lights; ceramics; acid-proof enamel; refractory utensils; refractory cements.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Oxychloride* (Zirconium chloride, Basic; Zirconyl chloride) $\text{ZrOCl}_2 \cdot 8\text{H}_2\text{O}$.

Color and properties: White, silky crystals.

Soluble in water and alcohol.

Derivation: By the action of hydrochloric acid on zirconium oxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Chemical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Phosphate* (Zirconium phosphate, Basic; Zirconium orthophosphate) $5\text{ZrO}_2(\text{P}_2\text{O}_5)_4 \cdot 8\text{H}_2\text{O}$.

Color and properties: White, dense, amorphous powder.

Soluble in acids; insoluble in water.

Derivation: By the action of orthophosphoric acid on zirconium hydroxide.

Grades: Technical.

Containers: Glass bottles.

Uses: Chemical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Phosphate, Basic. See Zirconium phosphate.

Zirconium Sulfate* $\text{Zr}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$.

Color and properties: White, crystalline powder.

Soluble in water; insoluble in alcohol.

Derivation: By the action of sulfuric acid on zirconium hydroxide.

Method of purification: Crystallization.

Grades: Technical.

Containers: Glass bottles.

Uses: Chemical reagent.

Fire hazard: None.

Railroad shipping regulations: None.

Zirconium Tetrachloride. See Zirconium chloride.

Zirconyl Chloride. See Zirconium oxychloride.

Zylonite. See Celluloid.

Zymase. See Invertin.

Addenda

Acid Arachic (Acid arachidic)

$\text{CH}_3(\text{CH}_2)_{18}\text{COOH}$.
Color and properties: Shining, white, crystalline leaflets.
Constants: Melting-point 77°C .
Soluble in ether; slightly soluble in alcohol; insoluble in water.
Derivation: From peanut oil.
Grades: Technical; pure.
Containers: Glass bottles.
Uses: Organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Acid Sulfanilic, Para-* (Acid para-aminobenzenesulfonic; Acid para-anilinesulfonic).

$\text{C}_6\text{H}_4\text{NH}_2\cdot\text{SO}_3\text{H}$. 1:4.
Color and properties: Grayish-white, flat crystals.
Constants: Melting-point: Chars at 280°C .
Soluble in fuming hydrochloric acid; slightly soluble in water; very slightly soluble in alcohol and ether.
Derivation: By heating aniline with weak fuming sulfuric acid and pouring the reaction product into water.
Method of purification: By boiling a solution of the sodium salt with animal charcoal.
Grades: Technical; pure.
Containers: Barrels; wooden kegs.
Uses: Dyestuffs; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Ammonium Thiosulfate* (Ammonium hyposulfite) $(\text{NH}_4)_2\text{S}_2\text{O}_3$.

Color and properties: Colorless crystals. Soluble in water.
Derivation: The waste sulfite liquors from the Le Blanc soda process are treated to produce calcium thiosulfate. A solution of this is boiled with ammonium sulfate, filtered, concentrated and crystallized.

Grades: Technical; pure.
Containers: Glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Amyl Oxide* (Amyl ether; Diamyl ether) $(\text{C}_5\text{H}_{11})_2\text{O}$.

Color and properties: Yellowish liquid; unpleasant odor.
Constants: Specific gravity 0.7745; boiling-point $169^\circ\text{--}172^\circ\text{C}$.
Soluble in alcohol and ether; insoluble in water.
Derivation: By heating amyl alcohol with iodine and distilling.
Grades: Technical.
Containers: Tins.
Uses: Solvent.
Fire hazard: Dangerous.
Railroad shipping regulations: None.

Bromobenzene* (Monobromobenzene; Bromobenzol) $\text{C}_6\text{H}_5\text{Br}$.

Color and properties: Colorless, oily liquid.
Constants: Specific gravity 1.49528; melting-point -30.6°C ; boiling-point 156.15°C .
Soluble in alcohol, ether and benzol; insoluble in water.
Derivation: By bromination of benzol in presence of iron.
Method of purification: Washing with caustic soda, followed by steam distillation.
Grades: Technical; pure.
Containers: Iron drums; glass bottles.
Uses: Medicine; organic synthesis.
Fire hazard: None.
Railroad shipping regulations: None.

Caoutchouc (Rubber; India rubber; Elastica).

Color and properties: Light cream to dark amber, amorphous, elastic dry, loaves, sheets or slabs, consisting of

caoutchouc, resins, proteins, mineral matter and fibrous insoluble matter.

Constants: Specific gravity: About 0.9. Soluble in carbon bisulfide, petroleum and coal-tar hydrocarbons, particularly solvent naphtha, chlorinated hydrocarbons and essential oils.

Derivation: By coagulation of the latex of various trees and shrubs, followed by washing and smoking.

Impurities: Sand, stones, twigs, bark, etc.

Manufacture: Crude rubber rapidly loses its valuable mechanical properties, therefore, it is vulcanized, i. e., mixed with sulfur and heated.

Grades: Hard rubber or ebonite; semi-soft or elastic. Rubber is graded according to the localities from which it is obtained, the best being "Para," which shows the lowest loss on washing and the smallest amount of insoluble matter. Other grades are "Negro heads," "Congo," "Assam," etc.

Containers: Barrels; wooden boxes.

Uses: Electric insulation; elastic bands and webbing; combs; pen-holders; foot-wear; brush and other handles; fountain pens; toys; gas and water hose; containers; vehicle tires; belting; etc.

Fire hazard: None.

Railroad shipping regulations: None.

Cellulose* $C_6H_{10}O_5$. Cellulose is the preponderant and essential constituent of all vegetable tissues and fibers. It is the basis of the textile and paper-making industries. Pure cellulose is most readily obtained from cotton-wool by treatment with dilute alkalis and acids and thorough washing. The cellulose obtained in this manner is a white substance of sp. gr. about 1.45, retaining the form of the cotton fibers. Cellulose dissolves in Schweitzer's reagent (cuprammonium) which consists of copper hydroxide dissolved in ammonia. It dissolves in no other liquid without chemical change. When nitrated it yields pyroxylin or nitrocellulose (guncotton), used as such and in the manufacture of smokeless powders,

collodion, celluloid and pyroxylin lacquers and miscellaneous products, and also artificial silk. Sulfuric acid converts cellulose into dextrin and glucose and, as the glucose is readily fermentable to ethyl alcohol, this is the basis of the processes for making ethyl alcohol from wood waste. Cellulose with glacial acetic acid forms cellulose acetate used in viscose products, airplane dopes, non-inflammable photographic films, etc. Cellulose is found in the paper industry chiefly as sulfite pulp, soda pulp and sulfate pulp. Spruce sulfite pulp contains upwards of 80 per cent of cellulose.

Cetraria (Iceland moss).

Color and properties: Gray fibrous bundles.

Chief constituents: Cetraric acid, lichenostearic acid, fumaric acid and lichenine.

Derivation: The thallus of *Cetraria islandica*; habitat: North America and Europe.

Grades: Technical.

Containers: Bales.

Uses: Medicine; food; emulsifier.

Fire hazard: None.

Railroad shipping regulations: None.

Chloretone* (Acetone chloroform; Tertiary trichlorobutyl alcohol).

$(CCl_3(CH_2)_2COH) \cdot \frac{1}{2}H_2O$.

Color and properties: White crystals; camphor-like odor and taste.

Constants: Melting-point $80^\circ-81^\circ C$.

Soluble in alcohol, ether, benzene, acetone, chloroform, oils, glycerine and glacial acetic acid; slightly soluble in water.

Derivation: By the action of potassium hydroxide on a cooled mixture of acetone and chloroform.

Grades: Technical; pure; solution (known as anesin).

Containers: Tins; glass bottles.

Uses: Medicine; organic synthesis.

Fire hazard: None.

Railroad shipping regulations: None.

Enzymes. A class of albumin-like substances, chemically exceedingly complex, none of which has been isolated

in a pure state. Their exact composition is still unknown, but they have certain properties common to the proteins. They are soluble in water, and are precipitated by alcohol (some are coagulated). They are precipitable by "salting out" and are diffusible only to a slight extent. The most important characteristic of enzymes is the property of changing chemically certain other substances, without being themselves changed at all. Their activity depends on the reaction and concentration of the solution of the substance on which they are acting. Heating destroys their activity.

Enzymes produce hydrolysis (decompose fats and the like, convert aldehydes into a mixture of acid and alcohol, invert sugars, digest proteins and the like), coagulate (clot the blood, curdle milk), oxidize (convert alcohol into acetic acid), reduce or decompose (lactic acid and alcohol fermentations). The number of enzymes is exceedingly great, the most important are: Diastase, emulsin, lipase, maltase, pancreatin, pepsin, ptyalin, rennet, steapsin, trypsin, and urease.

Gamboge (Cambogia; Gummi gutta)

Derivation: A gum-resin from *Garcinia hanburii*; habitat: East Indies; chief constituents: cambogic acid, a resin and a gum.

Grades: Technical; U. S. P.

Containers: Wooden barrels.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Gaultheria* (Checkerberry; Wintergreen; Deerberry; Boxberry; Teaberry).

Derivation: The leaves of *Gaultheria procumbens*; habitat: Canada and north-eastern U. S.; chief constituents: methyl salicylate, arbutin, ericolin, and ursol.

Grades: Technical.

Containers: Bales; boxes.

Uses: Medicine; extraction of oil.

Fire hazard: None.

Railroad shipping regulations: None.

Gelsemium* (Yellow Jasmin; Wild woodbine; Carolina jessamine).

Color and properties: Yellow masses. Chief constituents: Gelsemin, gelseminine and gelsemic acid.

Derivation: The dried rhizome and roots of *Gelsemium sempervirens*; habitat: Southern U. S.

Grades: Technical; U. S. P.

Containers: Boxes; tins.

Uses: Medicine; extraction of gelsemin and the alkaloid gelseminine.

Fire hazard: None.

Railroad shipping regulations: None.

Ginger (*Zingiber*).

Color and properties. Whitish to pale buff, irregularly branched pieces; aromatic odor; aromatic, burning taste.

Chief constituents: Ginger oil (volatile), a resin and gingerol.

Derivation: The dried rhizome of *Zingiber officinale*; habitat: Southern Asia, West Indies and Africa; cultivated in all tropical countries.

Grades: Technical; U. S. P.; B. P.

Containers: Tins; boxes.

Uses: Medicine; confectionery; condiment; soft drinks.

Fire hazard: None.

Railroad shipping regulations: None.

Hypericum* (St. John's bread; St. John's wort).

Color and properties: Dark brown mixture of leaves, twigs, etc.

Chief constituents: Tannin, a volatile oil, a pigment.

Derivation: The whole plant, *Hypericum perforatum*; habitat: Europe, Northern Asia, U. S.

Grades: Technical.

Containers: Bags; wooden barrels.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Lavender* (Garden lavender; True lavender).

Color and properties: Grayish-lavender particles.

Chief constituent: Lavender flower oil.

Derivation: The dried blossoms of *Lavandula vera* (*officinalis*); habitat: Mediterranean region.

Grades: Technical.
Containers: Boxes; bales
Uses: Medicine; insecticide; perfumery;
source of lavender oil
Fire hazard: None.
Railroad shipping regulations: None.

Methacetin* (Acetanilidin).
 $\text{CH}_3\text{OC}_6\text{H}_4\text{NH}_2$
Color and properties: White, crystal-
line powder; feebly bitter taste
Constants: Melting-point 127.1°C .
Soluble in alcohol, acetone and dilute
acids; insoluble in water.
Derivation: By the acetylation of para-
anisidin.
Grades: Technical; pure.
Containers: Tins; glass bottles.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Methane* (Marsh gas; Hydrogen bicar-
bide) CH_4 .
Color and properties: Odorless, taste-
less, inflammable gas; slight garlicky
odor; condensible with great diffi-
culty; forms an explosive mixture
with air.
Constants: Specific gravity (liquid)
 0.5542 ; melting-point -184°C ; boiling-
point -160°C .
Soluble in alcohol and ether; slightly
soluble in water and fuming sulfuric
acid.
Derivation: Methane occurs in all coal
mines. Mixed with air it forms fire-
damp, the cause of most coal-mine
explosions. It is the chief constitu-
ent of most natural gas, and of manu-
factured fuel and illuminating gas.
As such, it is not an article of com-
merce.

Mineral Wool* (Slag wool).
Color and properties: Grayish-yellow,
silky threads.
Derivation: By blowing steam or hot
air through molten slag.
Grades: Technical.
Containers: Boxes.
Uses: Packing; insulation; filtering me-
dium; substitute for asbestos; fire-
proofing; building materials.

Fire hazard: None.
Railroad shipping regulation: None.

Neodymium* Nd.
Color and properties: One of the metal-
lic elements of the rare earth group
yielding red salts.
Constants: Specific gravity 6.9563 ; melt-
ing-point 840°C .
Decomposes water.
Derivation: From monazite sand in the
form of salts, by extraction with
acids.
Grades: Technical.
Containers: Boxes.
Uses: Neodymium salts.
Fire hazard: None.
Railroad shipping regulations: None.

Nepeta* (Catnip; Catmint).
Derivation: The herb, *Nepeta cataria*;
habitat: Europe, Asia, U. S.
Grades: Technical.
Containers: Bales; boxes.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Nutmeg Oil* (Myristica oil; Oleum my-
ristica)
Color and properties: Thin, colorless
or pale yellow, liquid, volatile oil;
strong nutmeg odor; warm, spicy
taste.
Chief known constituents: Myristicin;
pinene; dipentene
Constants: Specific gravity $0.865-0.930$;
optical rotation $+8$ to $+28$.
Soluble in alcohol, carbon bisulfide and
glacial acetic acid
Derivation: By distillation from nut-
megs, *Myristica fragrans*.
Grades: Technical; U. S. P.; B. P.
Containers: Glass bottles; barrels.
Uses: Medicine; flavoring.
Fire hazard: None.
Railroad shipping regulations: None.

Orchil (Archil; Cudbear; Orseille; Per-
sio).
Color and Properties: Dark brown-red
paste or aqueous extract.
Chief constituents: Orcin and orcein.
Derivation: A coloring matter obtained

from various species of lichens, *Roccella*, *Variolaria*, *Lecanora*, etc., by treatment with ammonia and exposure to air; habitat: Azores, Canary Islands, and Mediterranean region.
Grades: Paste; extract.
Containers: Glass bottles.
Uses: Dyeing, particularly carpet yarns.
Fire hazard: None.
Railroad shipping regulations: None.

Orcin (Dioxytoluene; Methylresorcinol; Orcinol) $\text{CH}_3\text{C}_6\text{H}_3(\text{OH})_2\cdot\text{H}_2\text{O}$. 1:3.5.
Color and properties: White, crystalline prisms, becoming red in air; intensely sweet, unpleasant taste.
Constants: Specific gravity 1.2805; melting-point (anhydrous) 107°C ., (hydrated) 56°C .; boiling-point $287^\circ\text{--}290^\circ\text{C}$.
Soluble in water, alcohol, and ether.
Derivation: By fermentation of various species of lichens (*Roccella*), and extraction.
Grades: Technical.
Containers: Glass bottles.
Uses: Medicine; reagent for certain carbohydrates.
Fire hazard: None.
Railroad shipping regulations: None.

Phenylethyl Alcohol* (Benzyl carbinol)
• $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{OH}$.
Color and properties: Colorless liquid.
Constants: Specific gravity 1.0235; melting point -2°C .; boiling-point 210°C .
Soluble in alcohol and ether; slightly soluble in water.
Derivation. (a) By reduction of phenylacetic ethyl ester by sodium in absolute alcohol. (b) By the action of ethylene oxide on phenyl-magnesium bromide, and subsequent hydrolysis.
Method of purification: Rectification.
Grades: Technical.
Containers: Tin cans and glass bottles.
Uses: Organic synthesis; perfumery.
Fire hazard: None.
Railroad shipping regulations: None.

Pilocarpus (Jaborandi).
Color and properties: Yellowish-green

leaflets; *bitterish, slightly salty, aromatic taste*.
Chief constituents: Pilocarpine, a volatile oil, jaborine, and pilocarpidine.
Derivation: The dried leaflets of *Pilocarpus jaborandi* or *P. microphyllus*; habitat: Brazil and Paraguay.
Grades: Technical; U. S. P.
Containers: Boxes; bales.
Uses: Medicine; source of pilocarpine.
Fire hazard: None.
Railroad shipping regulations: None.

Pimenta (Pimento; Jamaica pepper; Allspice).
Color and properties: Dark brown berries or powder.
Derivation: The dried, nearly ripe fruit of *Pimenta officinalis*; habitat: East Indies; West Indies; Central America; South America.
Grades: Technical; U. S. P.
Containers: Tins; wooden boxes.
Uses: Medicine; perfumery; condiment.
Fire hazard: None.
Railroad shipping regulations: None.

Potassium-Titanium Oxalate*.
 $\text{TiO}(\text{CO}_2\cdot\text{CO}_2\text{K})_2\cdot 2\text{H}_2\text{O}$.
Color and properties: Greenish-white, lustrous crystals.
Soluble in water.
Derivation: By treating titanium hydroxide with potassium oxalate and oxalic acid.
Grades: Technical; pure.
Containers: Tins; kegs.
Uses: Mordant in cotton and leather dyeing.
Fire hazard: None.
Railroad shipping regulations: None.

Psyllium (Fleawort; Fleaseed).
Color and properties: Dark brown, boat-shaped, shiny seeds, containing a mucilaginous compound.
Derivation: Seeds of *Plantago psyllium*; habitat: Southern Europe.
Grades: Technical.
Containers: Boxes.
Uses: Sizing silk; printing fabrics; paper manufacture; medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Raffinose* (Mellitose; Mellitriose; Gosypose).

$C_{18}H_{32}O_{16} \cdot 5H_2O$.

Color and properties: White, crystalline powder; sweet taste.

Constants: Specific gravity 1.465; melting-point (anhydrous) 118° - $119^{\circ}C$; boiling-point: Decomposes at about $130^{\circ}C$; optical rotation $+104.5$.

Soluble in water; very slightly soluble in alcohol.

Derivation: By hydrolysis from cotton-seed meal.

Method of purification: Recrystallization.

Grades: Technical; pure.

Containers: Wooden barrels; glass bottles.

Uses: Medicine; manufacture of melibiose; bacteriology.

Fire hazard: None.

Railroad shipping regulations: None.

Reseda Oil (Mignonette oil).

Color and properties: Yellow liquid; disagreeable odor, changed into the pleasant mignonette odor when the oil is dissolved in a large amount of alcohol.

Soluble in alcohol and ether.

Derivation: By extraction from the flowers with petroleum ether and evaporation of the latter.

Method of purification: Rectification.

Grades: Technical.

Containers: Glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Rosemary Oil*.

Color and properties: Colorless or pale yellow, limpid liquid, volatile oil; warm, somewhat camphoraceous taste; pungent, rosemary odor.

Chief known constituents: Pinene, camphene, cineol, camphor, borneol and bornyl acetate.

Constants: Specific gravity 0.894-0.920; optical rotation -9 to $+18$; saponification value 12-20.

Soluble in alcohol, ether, and glacial acetic acid.

Derivation: By distillation from the leaves of *Rosmarinus officinalis*.

Grades: Technical; U. S. P.

Containers: Copper flasks; glass bottles.

Uses: Perfumery; medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sage Oil (*Salvia* oil).

Color and properties: Yellowish or greenish-yellow liquid; penetrating sage odor.

Chief known constituents: Cineol, thujone; pinene.

Constants: Specific gravity 0.915-0.925; optical rotation $+10$ to $+25$; saponification value 107.

Soluble in alcohol.

Derivation: By distillation from the leaves of *Salvia officinalis*.

Grades: Technical.

Containers: Glass bottles; copper flasks.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Salophen* (Acetoaminosalol, Acetyl-para-aminosalol, Acetyl-para-aminophenyl salicylate).

$C_6H_4OH.COOC_6H_4NH.COCH_3$.

Color and properties: Fine, white, crystalline scales; odorless; tasteless.

Constants: Melting-point 187° - $188^{\circ}C$.

Soluble in alcohol, ether, benzol, dilute solutions of the alkalis and hot water; insoluble in benzine; decomposed by strong alkalis.

Derivation: By reducing para-nitrophenol salicylate to para-aminophenol salicylate and acetylating the latter.

Method of purification: Recrystallization.

Grades: Technical; pure.

Containers: Tins; glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Salvarsan* (Six-o-six, Arsphenamine, Diaminodihydroxyarsenobenzene hydrochloride)

$[HO(NH_2.HCl)C_6H_3As]_2 \cdot 2H_2O$.

Color and properties: Yellow, crystalline, hygroscopic powder; very unstable in air.

Soluble in water and caustic soda solutions.

Derivation: By precipitating diaminodihydroxyarsenobenzene with sodium methanalsulfoxylate.

Grades: Pure; medicinal.

Containers: Sealed glass tubes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Sambucus* (Elder).

Color and properties: Brownish-yellow petals.

Chief constituents: A volatile oil, a resin and tannin.

Derivation: The flowers of *Sambucus canadensis*.

Grades: Technical.

Containers: Boxes.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Santonin* $C_{15}H_{18}O_3$.

Color and properties: Glossy, colorless crystals, turning yellow on exposure to light; odorless; tasteless at first, then bitter; poisonous.

Constants: Specific gravity 1.866; melting-point 169° - 170° C.; boiling-point: Sublimes.

Soluble in alcohol, alkalis and most volatile and fatty oils; very slightly soluble in water.

Derivation: By extraction from *santonica*, *Artemisia pauciflora*.

Grades: Technical; U. S. P.; B. P.

Containers: Amber or black glass bottles; tins.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Stearin Pitch* (Candle-tar; Candle pitch; Palm pitch).

Color and properties: Brownish-black, semi-solid, plastic, tough, amorphous mass, converted into a hard, yet flexible mass when heated to 250° to 350° C.

Constants: Hard pitch: Melting-point 140° - 170° C.

Soft stearin pitch is soluble in benzol, carbon bisulfide and carbon tetrachlo-

ride; hard pitch is insoluble in these solvents.

Derivation: The residue remaining from the distillation of fatty acids.

Grades: Soft; hard.

Containers: Wooden barrels.

Uses: Insulation; lubricant for steel-plate rollers; marine caulking; waterproofing; roofing manufacture; paints and varnishes, rubber substitutes.

Fire hazard: Dangerous.

Railroad shipping regulations: None.

Stovaine (Benzoyldimethylaminopropanol hydrochloride; Dimethylaminobenzoylpentanol hydrochloride; Ethyldimethylaminopentanolbenzol hydrochloride) $C_{14}H_{21}NO_2 \cdot HCl$.

Color and properties: Small, lustrous, crystalline scales.

Constants: Melting-point 175° C.

Soluble in water, alcohol, and acetic ether; slightly soluble in acetone.

Derivation: By the interaction of benzoyl chloride and alpha-dimethylaminopentanol, prepared from methylaminoacetone and ethyl-magnesium chloride.

Grades: Technical.

Containers: Glass bottles.

Uses: Medicine.

Fire hazard: None.

Railroad shipping regulations: None.

Styrax Oil (Storax oil).

Color and properties: Pale yellow, liquid, volatile oil.

Chief known constituents: Styrol; cinnamic acid esters.

Constants: Specific gravity 0.890-0.900; boiling-point 150° - 300° C., with decomposition; optical rotation -15.

Derivation: By distillation from styrax.

Grades: Technical.

Containers: Glass bottles.

Uses: Perfumery.

Fire hazard: None.

Railroad shipping regulations: None.

Sulfite Acid Liquor.* An aqueous solution of calcium bisulfite or calcium and magnesium bisulfites, containing a large amount of free sulfur dioxide. It is prepared from sulfur dioxide and lime-

stone or dolomite or lime. Used in the manufacture of sulfite pulp in the paper industry.

Taraxacum* (Dandelion; Lion's tooth).
Color and properties: Blackish-brown roots; odorless; bitter taste.
Derivation: The dried root of the dandelion, *Taraxacum officinale*; habitat: North America and Europe.
Grades: Technical; U. S. P.; B. P.
Containers: Bags.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Tigilium (Croton; Purging croton; Mollucca grains; Grana tilli).
Color and properties: Ovoid seed, reddish-brown when fresh, turning grayish-brown with age.
Chief constituents: Croton oil; tiglic acid; crotonol.

Derivation: The seed of *Croton tigilium*; habitat: East Indies and Philippines.
Grades: Technical.
Containers: Bags; boxes.
Uses: Medicine; source of croton oil.
Fire hazard: None.
Railroad shipping regulations: None.

Triticum* (Couch grass; Dog grass; Quick grass; Graminis).
Color and properties: Straw-colored to brownish-yellow masses; sweet taste; slight odor.
Chief constituents: Triticin; levulose; inositol; acid malates.
Derivation: The dried rhizome of *Agropyron repens*; habitat: U. S., Europe and Northern Asia.
Grades: Technical; U. S. P.; B. P.
Containers: Bags; boxes.
Uses: Medicine.
Fire hazard: None.
Railroad shipping regulations: None.

Combining (Atomic) Weights

O = 16

| | | | | | |
|------------|----|--------|----------------------|----|--------|
| Aluminum | Al | 27.1 | Molybdenum | Mo | 96.0 |
| Antimony | Sb | 120.2 | Neodymium | Nd | 144.3 |
| Argon | A | 39.88 | Neon | Ne | 20.2 |
| Arsenic | As | 74.96 | Nickel | Ni | 58.68 |
| Barium | Ba | 137.37 | Nitron | Nt | 222.4 |
| Bismuth | Bi | 208.0 | Nitrogen | N | 14.01 |
| Boron | B | 11.0 | Osmium | Os | 190.9 |
| Bromine | Br | 79.92 | Oxygen | O | 16.00 |
| Cadmium | Cd | 112.40 | Palladium | Pd | 106.7 |
| Cæsium | Cs | 132.81 | Phosphorus | P | 31.04 |
| Calcium | Ca | 40.07 | Platinum | Pt | 195.2 |
| Carbon | C | 12.005 | Potassium | K | 39.10 |
| Cerium | Ce | 140.25 | Praseodymium | Pr | 140.9 |
| Chlorine | Cl | 35.46 | Radium | Ra | 226.0 |
| Chromium | Cr | 52.0 | Rhodium | Rh | 102.9 |
| Cobalt | Co | 58.97 | Rubidium | Rb | 85.45 |
| Columbium | Cb | 93.1 | Ruthenium | Ru | 101.7 |
| Copper | Cu | 63.57 | Samarium | Sa | 150.4 |
| Dysprosium | Dy | 162.5 | Scandium | Sc | 44.1 |
| Erbium | Er | 167.7 | Selenium | Se | 79.2 |
| Europium | Eu | 152.0 | Silicon | Si | 28.3 |
| Fluorine | F | 19.0 | Silver | Ag | 107.88 |
| Gadolinium | Gd | 157.3 | Sodium | Na | 23.00 |
| Gallium | Ga | 60.9 | Strontium | Sr | 87.63 |
| Germanium | Ge | 72.5 | Sulphur | S | 32.06 |
| Glucinum | Gl | 9.1 | Tantalum | Ta | 181.5 |
| Gold | Au | 197.2 | Tellurium | Te | 127.5 |
| Helium | He | 4.00 | Terbium | Tb | 159.2 |
| Holmium | Ho | 163.5 | Thallium | Tl | 204.0 |
| Hydrogen | H | 1.008 | Thorium | Th | 232.4 |
| Indium | In | 114.8 | Thulium | Tm | 168.5 |
| Iodine | I | 126.92 | Tin | Sn | 118.7 |
| Iridium | Ir | 193.1 | Titanium | Ti | 48.1 |
| Iron | Fe | 55.84 | Tungsten | W | 184.0 |
| Krypton | Kr | 82.02 | Uranium | U | 238.2 |
| Lanthanum | La | 139.0 | Vanadium | V | 51.0 |
| Lead | Pb | 207.20 | Xenon | Xe | 130.2 |
| Lithium | Li | 6.94 | Ytterbium (Neoytter- | | |
| Lutecium | Lu | 175.0 | bimu) | Yb | 173.5 |
| Magnesium | Mg | 24.32 | Yttrium | Y | 88.7 |
| Manganese | Mn | 54.93 | Zinc | Zn | 65.37 |
| Mercury | Hg | 200.6 | Zirconium | Zr | 90.6 |

Domestic Weights and Measures

Apothecaries' Weight

| | |
|-----------------|-----------|
| 20 grain..... | 1 scruple |
| 3 scruples..... | 1 dram |
| 8 drams..... | 1 ounce |
| 12 ounces..... | 1 pound |

Avoirdupois Weight (short ton)

| | |
|-----------------------------|-----------------------|
| $27^{11}/_{32}$ grains..... | 1 dram |
| 16 drams..... | 1 ounce |
| 16 ounces..... | 1 pound |
| 14 pounds..... | 1 stone |
| 25 pounds..... | 1 quarter |
| 4 quarters..... | 1 hundredweight (cwt) |
| 20 hundredweights..... | 1 ton |

Avoirdupois Weight (long ton)

| | |
|-----------------------------|-----------------|
| $27^{11}/_{32}$ grains..... | 1 dram |
| 16 drams..... | 1 ounce |
| 16 ounces..... | 1 pound |
| 112 pounds..... | 1 hundredweight |
| 20 hundredweights..... | 1 ton |

Circular Measure

| | |
|-----------------|---------------------------|
| 60 seconds..... | 1 minute |
| 60 minutes..... | 1 degree |
| 30 degrees..... | 1 sign |
| 12 signs..... | 1 circle or circumference |

Cubic Measure

| | |
|------------------------|--------------|
| 1728 cubic inches..... | 1 cubic foot |
| 27 cubic feet..... | 1 cubic yard |

Dry Measure

| | |
|---------------|----------|
| 2 pints..... | 1 quart |
| 8 quarts..... | 1 peck |
| 4 pecks..... | 1 bushel |

Liquid Measure

| | |
|------------------------------|------------|
| 4 gills..... | 1 pint |
| 2 pints..... | 1 quart |
| 4 quarts..... | 1 gallon |
| $31\frac{1}{2}$ gallons..... | 1 barrel |
| 2 barrels..... | 1 hogshead |

Long Measure

| | |
|---------------------------|----------------|
| 12 inches..... | 1 foot |
| 3 feet..... | 1 yard |
| $5\frac{1}{2}$ yards..... | 1 rod or pole |
| 40 rods..... | 1 furlong |
| 8 furlongs..... | 1 statute mile |
| 5280 feet..... | 1 statute mile |
| 1760 yards..... | 1 statute mile |
| 3 miles..... | 1 league |

Mariners' Measure

| | |
|-----------------------------------|-----------------|
| 6 feet..... | 1 fathom |
| 120 fathoms..... | 1 cable length |
| $7\frac{1}{2}$ cable lengths..... | 1 mile |
| 5280 feet..... | 1 statute mile |
| 6085 feet..... | 1 nautical mile |

Paper Measure

| | |
|-----------------|--------------|
| 24 sheet..... | 1 quire |
| 24 quires..... | 1 short ream |
| 500 sheets..... | 1 long ream |
| 2 reams..... | 1 bundle |
| 5 bundles..... | 1 bale |

Square Measure

| | |
|-----------------------------------|-----------------------|
| 144 square inches..... | 1 square foot |
| 9 square feet..... | 1 square yard |
| $30\frac{1}{4}$ square yards..... | 1 square rod or perch |
| 40 square rods..... | 1 rood |
| 4 roods..... | 1 acre |
| 640 acres..... | 1 square mile |
| 36 square miles..... | 1 township |

Troy Weight

| | |
|----------------------|---------------|
| 24 grains..... | 1 pennyweight |
| 20 pennyweights..... | 1 ounce |
| 12 ounces..... | 1 pound |

Metric Equivalents

| | Approximate | | Exact |
|---------------------|-------------|---------------------------|--------|
| 1 acre | 0.40 | hectare | 0.4047 |
| 1 bushel | 35. | liters | 35.24 |
| 1 centimeter | 0.39 | inch | 0.3937 |
| 1 cubic centimeter | 0.061 | cubic inch | 0.0610 |
| 1 cubic foot | 0.028 | cubic meter | 0.0283 |
| 1 cubic inch | 16. | cubic centimeters | 16.39 |
| 1 cubic meter | 35. | cubic feet | 35.31 |
| 1 cubic meter | 1.3 | cubic yards | 1.308 |
| 1 cubic yard | 0.76 | cubic meter | 0.7646 |
| 1 foot | 30. | centimeters | 30.48 |
| 1 gallon (U. S.) | 3.8 | liters | 3.785 |
| 1 gallon (Imperial) | 4.5 | liters | 4.546 |
| 1 grain | 0.065 | gram | 0.0648 |
| 1 gram | 15. | grains | 15.43 |
| 1 hectare | 2.5 | acres | 2.471 |
| 1 inch | 25. | millimeters | 25.40 |
| 1 kilogram (kilo) | 2.2 | pounds | 2.205 |
| 1 kilometer | 0.62 | mile | 0.6214 |
| 1 liter | 0.91 | quart (dry) | 0.9081 |
| 1 liter | 1.1 | quarts (liquid) (U. S.) | 1.057 |
| 1 liter | 0.88 | quart (liquid) (Imperial) | 0.8799 |
| 1 meter | 3.3 | feet | 3.281 |
| 1 mile | 1.6 | kilometers | 1.609 |
| 1 millimeter | 0.039 | inch | 0.0394 |
| 1 ounce (av'd) | 28. | grams | 28.35 |
| 1 ounce (Troy) | 31. | grams | 31.10 |
| 1 peck | 8.8 | liters | 8.810 |
| 1 pint (liquid) | 0.47 | liter | 0.4732 |
| 1 pound | 0.45 | kilogram | 0.4536 |
| 1 quart (dry) | 1.1 | liters | 1.101 |
| 1 quart (liquid) | 0.95 | liter | 0.9463 |
| 1 square centimeter | 0.15 | square inch | 0.1550 |
| 1 square foot | 0.093 | square meter | 0.0929 |
| 1 square inch | 6.5 | square centimeters | 6.452 |
| 1 square meter | 1.2 | square yards | 1.196 |
| 1 square meter | 11. | square feet | 10.76 |
| 1 square yard | 0.84 | square meter | 0.8361 |
| 1 ton (2,000 lbs.) | 0.91 | metric ton | 0.9072 |
| 1 ton (2,240 lbs.) | 1. | metric ton | 1.016 |
| 1 ton (metric) | 1.1 | ton (2,000 lbs.) | 1.102 |
| 1 ton (metric) | 0.98 | ton (2,240 lbs.) | 0.9842 |
| 1 yard | 0.91 | meter | 0.9144 |

Equivalent Temperature Readings for Fahrenheit and Centigrade Scales

| Fahrenheit Degrs. | Centigrade Degrs. | Fahrenheit Degrs. | Centigrade Degrs. | Fahrenheit Degrs. | Centigrade Degrs. | Fahrenheit Degrs. | Centigrade Degrs. |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| -459.4 | -273. | -21. | -29.44 | 17.60 | -8. | 56. | 13.33 |
| -436. | -270. | -20.20 | -29. | 18. | -7.78 | 57. | 13.89 |
| -418. | -260. | -20. | -28.89 | 19. | -7.22 | 57.20 | 14. |
| -400. | -240. | -19. | -28.33 | 19.40 | -7. | 58. | 14.44 |
| -382. | -230. | -18.40 | -28. | 20. | -6.67 | 59. | 15. |
| -364. | -220. | -18. | -27.78 | 21. | -6.11 | 60. | 15.56 |
| -346. | -210. | -17. | -27.22 | 21.20 | -6. | 60.80 | 16. |
| -328. | -200. | -16.60 | -27. | 22. | -5.56 | 61. | 16.11 |
| -310. | -190. | -16. | -26.67 | 23. | -5. | 62. | 16.67 |
| -292. | -180. | -15. | -26.11 | 24. | -4.44 | 62.60 | 17. |
| -274. | -170. | -14.80 | -26. | 24.80 | -4. | 63. | 17.22 |
| -256. | -160. | -14. | -25.56 | 25. | -3.89 | 64. | 17.78 |
| -238. | -150. | -13. | -25. | 26. | -3.33 | 64.40 | 18. |
| -220. | -140. | -12. | -24.44 | 26.60 | -3. | 65. | 18.33 |
| -202. | -130. | -11.20 | -24. | 27. | -2.78 | 66. | 18.89 |
| -184. | -120. | -11. | -23.89 | 28. | -2.22 | 66.20 | 19. |
| -166. | -110. | -10. | -23.33 | 28.40 | -2. | 67. | 19.44 |
| -148. | -100. | -9.40 | -23. | 29. | -1.67 | 68. | 20. |
| -130. | -95. | -9. | -22.78 | 30. | -1.11 | 69. | 20.56 |
| -112. | -90. | -8. | -22.22 | 30.20 | -1. | 69.80 | 21. |
| -121. | -85. | -7.60 | -22. | 31. | -0.56 | 70. | 21.11 |
| -112. | -80. | -7. | -21.67 | 32. | 0. | 71. | 21.67 |
| -103. | -75. | -6. | -21.11 | 33. | + 0.56 | 71.60 | 22. |
| -94. | -70. | -5.80 | -21. | 33.80 | 1. | 72. | 22.22 |
| -85. | -65. | -5. | -20.56 | 34. | 1.11 | 73. | 22.78 |
| -76. | -60. | -4. | -20 | 35. | 1.67 | 73.40 | 23. |
| -67. | -55. | -3. | -19.44 | 35.60 | 2. | 74. | 23.33 |
| -58. | -50. | -2.20 | -19. | 36. | 2.22 | 75. | 23.89 |
| -49. | -45. | -2. | -18.89 | 37. | 2.78 | 75.20 | 24. |
| -40. | -40. | -1. | -18.33 | 37.40 | 3. | 76. | 24.44 |
| -39. | -39.44 | -0.40 | -18. | 38. | 3.33 | 77. | 25. |
| -38.20 | -39. | 0. | -17.78 | 39. | 3.89 | 78. | 25.56 |
| -38. | -38.89 | + 1. | -17.22 | 39.20 | 4. | 78.80 | 26. |
| -37. | -38.33 | 1.40 | -17. | 40. | 4.44 | 79. | 26.11 |
| -36.40 | -38. | 2. | -16.67 | 41. | 5. | 80. | 26.67 |
| -36. | -37.78 | 3. | -16.11 | 42. | 5.56 | 80.60 | 27. |
| -35. | -37.22 | 3.20 | -16 | 42.80 | 6. | 81. | 27.22 |
| -34.60 | -37. | 4. | -15.56 | 43. | 6.11 | 82. | 27.78 |
| -34. | -36.67 | 5. | -15. | 44. | 6.67 | 82.40 | 28. |
| -33. | -36.11 | 6. | -14.44 | 44.60 | 7. | 83. | 28.33 |
| -32.80 | -36. | 6.80 | -14. | 45. | 7.22 | 84. | 28.89 |
| -32. | -35.56 | 7. | -13.89 | 46. | 7.78 | 84.20 | 29. |
| -31. | -35. | 8. | -13.33 | 46.40 | 8. | 85. | 29.44 |
| -30. | -34.44 | 8.60 | -13. | 47. | 8.33 | 86. | 30. |
| -29.20 | -34. | 9. | -12.78 | 48. | 8.89 | 87. | 30.56 |
| -29. | -33.89 | 10. | -12.22 | 48.20 | 9. | 87.80 | 31. |
| -28. | -33.33 | 10.40 | -12. | 49. | 9.44 | 88. | 31.11 |
| -27.40 | -33. | 11. | -11.67 | 50. | 10. | 89. | 31.67 |
| -27. | -32.78 | 12. | -11.11 | 51. | 10.56 | 89.60 | 32. |
| -26. | -32.22 | 12.20 | -11. | 51.80 | 11. | 90. | 32.22 |
| | | | | | | | 32.78 |

Equivalent Temperature Readings for Fahrenheit and Centigrade Scales—Continued

| Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 95. | 35 | 134. | 56.67 | 172.40 | 78. | 211. | 99.44 |
| 96. | 35.56 | 134.60 | 57. | 173. | 78.33 | 212. | 100. |
| 96.80 | 36. | 135. | 57.22 | 174. | 78.80 | 213. | 100.56 |
| 97. | 36.11 | 136. | 57.78 | 174.20 | 79. | 213.80 | 101. |
| 98. | 36.67 | 136.40 | 58. | 175. | 79.44 | 214. | 101.11 |
| 98.60 | 37. | 137. | 58.33 | 176. | 80. | 215. | 101.67 |
| 99. | 37.22 | 138. | 58.89 | 177. | 80.56 | 215.60 | 102. |
| 100. | 37.78 | 138.20 | 59. | 177.80 | 81. | 216. | 102.22 |
| 100.40 | 38. | 139. | 59.44 | 178. | 81.11 | 217. | 102.78 |
| 101. | 38.33 | 140. | 60. | 179. | 81.67 | 217.40 | 103. |
| 102. | 38.89 | 141. | 60.56 | 179.60 | 82. | 218. | 103.33 |
| 102.20 | 39. | 141.80 | 61. | 180. | 82.22 | 219. | 103.89 |
| 103. | 39.44 | 142. | 61.11 | 181. | 82.78 | 219.20 | 104. |
| 104. | 40. | 143. | 61.67 | 181.40 | 83. | 220. | 104.44 |
| 105. | 40.56 | 143.60 | 62. | 182. | 83.33 | 221. | 105. |
| 105.80 | 41. | 144. | 62.22 | 183. | 83.89 | 222. | 105.56 |
| 106. | 41.11 | 145. | 62.78 | 183.20 | 84. | 222.80 | 106. |
| 107. | 41.67 | 145.40 | 63. | 184. | 84.44 | 223. | 106.11 |
| 107.60 | 42. | 146. | 63.33 | 185. | 85. | 224. | 106.67 |
| 108. | 42.22 | 147. | 63.89 | 186. | 85.56 | 224.60 | 107. |
| 109. | 42.78 | 147.20 | 64. | 186.80 | 86. | 225. | 107.22 |
| 109.40 | 43. | 148. | 64.44 | 187. | 86.11 | 226. | 107.78 |
| 110. | 43.33 | 149. | 65. | 188. | 86.67 | 226.40 | 108. |
| 111. | 43.89 | 150. | 65.56 | 188.60 | 87. | 227. | 108.33 |
| 111.20 | 44. | 150.80 | 66. | 189. | 87.22 | 228. | 108.89 |
| 112. | 44.44 | 151. | 66.11 | 190. | 87.78 | 228.20 | 109. |
| 113. | 45. | 152. | 66.67 | 190.40 | 88. | 229. | 109.44 |
| 114. | 45.56 | 152.60 | 67. | 191. | 88.33 | 230. | 110. |
| 114.80 | 46. | 153. | 67.22 | 192. | 88.89 | 231. | 110.56 |
| 115. | 46.11 | 154. | 67.78 | 192.20 | 89. | 231.80 | 111. |
| 116. | 46.67 | 154.40 | 68. | 193. | 89.44 | 232. | 111.11 |
| 116.60 | 47. | 155. | 68.33 | 194. | 90. | 233. | 111.67 |
| 117. | 47.22 | 156. | 68.89 | 195. | 90.56 | 233.60 | 112. |
| 118. | 47.78 | 156.20 | 69. | 195.80 | 91. | 234. | 112.22 |
| 118.40 | 48. | 157. | 69.44 | 196. | 91.11 | 235. | 112.78 |
| 119. | 48.33 | 158. | 70. | 197. | 91.67 | 235.40 | 113. |
| 120. | 48.89 | 159. | 70.56 | 197.60 | 92. | 236. | 113.33 |
| 120.20 | 49. | 159.80 | 71. | 198. | 92.22 | 237. | 113.89 |
| 121. | 49.44 | 160. | 71.11 | 199. | 92.78 | 237.20 | 114. |
| 122. | 50. | 161. | 71.67 | 199.40 | 93. | 238. | 114.44 |
| 123. | 50.56 | 161.60 | 72. | 200. | 93.33 | 239. | 115. |
| 123.80 | 51. | 162. | 72.22 | 201. | 93.89 | 240. | 115.56 |
| 124. | 51.11 | 163. | 72.78 | 201.20 | 94. | 240.80 | 116. |
| 125. | 51.67 | 163.40 | 73. | 202. | 94.44 | 241. | 116.11 |
| 125.60 | 52. | 164. | 73.33 | 203. | 95. | 242. | 116.67 |
| 126. | 52.22 | 165. | 73.89 | 204. | 95.56 | 242.60 | 117. |
| 127. | 52.78 | 165.20 | 74. | 204.80 | 96. | 243. | 117.22 |
| 127.40 | 53. | 166. | 74.44 | 205. | 96.11 | 244. | 117.78 |
| 128. | 53.33 | 167. | 75. | 206. | 96.67 | 244.40 | 118. |
| 129. | 53.89 | 168. | 75.56 | 206.60 | 97. | 245. | 118.33 |
| 129.20 | 54. | 168.80 | 76. | 207. | 97.22 | 246. | 118.89 |
| 130. | 54.44 | 169. | 76.11 | 208. | 97.78 | 246.20 | 119. |
| 131. | 55. | 170. | 76.67 | 208.40 | 98. | 247. | 119.44 |
| 132. | 55.56 | 170.60 | 77. | 209. | 98.33 | 248. | 120. |
| 132.80 | 56. | 171. | 77.22 | 210. | 98.89 | 249. | 120.56 |
| 133. | 56.11 | 172. | 77.78 | 210.20 | 99. | 249.80 | 121. |

Equivalent Temperature Readings for Fahrenheit and Centigrade Scales—Continued

| Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 250. | 121.11 | 289. | 142.78 | 327.20 | 164. | 366.80 | 186. |
| 251. | 121.67 | 289.40 | 143. | 328. | 164.44 | 367. | 186.11 |
| 251.60 | 122. | 290. | 143.33 | 329. | 165. | 368. | 186.67 |
| 252. | 122.22 | 291. | 143.89 | 330.4 | 165.56 | 368.60 | 187. |
| 253. | 122.78 | 291.20 | 144. | 330.80 | 166. | 369. | 187.22 |
| 253.40 | 123. | 292. | 144.44 | 331. | 166.11 | 370. | 187.78 |
| 254. | 123.33 | 293. | 145. | 332. | 166.67 | 370.40 | 188. |
| 255. | 123.89 | 294. | 145.56 | 332.60 | 167. | 371. | 188.33 |
| 255.20 | 124. | 294.80 | 146. | 333. | 167.22 | 372. | 188.89 |
| 256. | 124.44 | 295. | 146.11 | 334. | 167.78 | 372.20 | 189. |
| 257. | 125. | 296. | 146.67 | 334.40 | 168. | 373. | 189.44 |
| 258. | 125.56 | 296.60 | 147. | 335. | 168.33 | 374. | 190. |
| 258.80 | 126. | 297. | 147.22 | 336. | 168.89 | 375. | 190.56 |
| 259. | 126.11 | 298. | 147.78 | 336.20 | 169. | 375.80 | 191. |
| 260. | 126.67 | 298.40 | 148. | 337. | 169.44 | 376. | 191.11 |
| 260.60 | 127. | 299. | 148.33 | 338. | 170. | 377. | 191.67 |
| 261. | 127.22 | 300. | 148.89 | 339. | 170.56 | 377.60 | 192. |
| 262. | 127.78 | 300.20 | 149. | 339.80 | 171. | 378. | 192.22 |
| 262.40 | 128. | 301. | 149.44 | 340. | 171.11 | 379. | 192.78 |
| 263. | 128.33 | 302. | 150. | 341. | 171.67 | 379.40 | 193. |
| 264. | 128.89 | 303. | 150.56 | 341.60 | 172. | 380. | 193.33 |
| 264.20 | 129. | 303.80 | 151. | 342. | 172.22 | 381. | 193.89 |
| 265. | 129.44 | 304. | 151.11 | 343. | 172.78 | 381.20 | 194. |
| 266. | 130. | 305. | 151.67 | 343.40 | 173. | 382. | 194.44 |
| 267. | 130.56 | 305.60 | 152. | 344. | 173.33 | 383. | 195. |
| 267.80 | 131. | 306. | 152.22 | 345. | 173.89 | 384. | 195.56 |
| 268. | 131.11 | 307. | 152.78 | 345.20 | 174. | 384.80 | 196. |
| 269. | 131.67 | 307.40 | 153. | 346. | 174.44 | 385. | 196.11 |
| 269.60 | 132. | 308. | 153.33 | 347. | 175. | 386. | 196.67 |
| 270. | 132.22 | 309. | 153.89 | 348. | 175.56 | 386.60 | 197. |
| 271. | 132.78 | 309.20 | 154. | 348.80 | 176. | 387. | 197.22 |
| 271.40 | 133. | 310. | 154.44 | 349. | 176.11 | 388. | 197.78 |
| 272. | 133.33 | 311. | 155. | 350. | 176.67 | 388.40 | 198. |
| 273. | 133.89 | 312. | 155.56 | 350.60 | 177. | 389. | 198.33 |
| 273.20 | 134. | 312.80 | 156. | 351. | 177.22 | 390. | 198.89 |
| 274. | 134.44 | 313. | 156.11 | 352. | 177.78 | 390.20 | 199. |
| 275. | 135. | 314. | 156.67 | 352.40 | 178. | 391. | 199.44 |
| 276. | 135.56 | 314.60 | 157. | 353. | 178.33 | 392. | 200. |
| 276.80 | 136. | 315. | 157.22 | 354. | 178.89 | 393. | 200.56 |
| 277. | 136.11 | 316. | 157.78 | 354.20 | 179. | 393.80 | 201. |
| 278. | 136.67 | 316.40 | 158. | 355. | 179.44 | 394. | 201.11 |
| 278.60 | 137. | 317. | 158.33 | 356. | 180. | 395. | 201.67 |
| 279. | 137.22 | 318. | 158.89 | 357. | 180.56 | 395.60 | 202. |
| 280. | 137.78 | 318.20 | 159. | 357.80 | 181. | 396. | 202.22 |
| 280.40 | 138. | 319. | 159.44 | 358. | 181.11 | 397. | 202.78 |
| 281. | 138.33 | 320. | 160. | 359. | 181.67 | 397.40 | 203. |
| 282. | 138.89 | 321. | 160.56 | 359.60 | 182. | 398. | 203.33 |
| 282.20 | 139. | 321.80 | 161. | 360. | 182.22 | 399. | 203.89 |
| 283. | 139.44 | 322. | 161.11 | 361. | 182.78 | 399.20 | 204. |
| 284. | 140. | 323. | 161.67 | 361.40 | 183. | 400. | 204.44 |
| 285. | 140.56 | 323.60 | 162. | 362. | 183.33 | 401. | 205. |
| 285.80 | 141. | 324. | 162.22 | 363. | 183.89 | 402. | 205.56 |
| 286. | 141.11 | 325. | 162.78 | 363.20 | 184. | 402.80 | 206. |
| | | | | 364. | 184.44 | 403. | 206.11 |

Equivalent Temperature Readings for Fahrenheit and Centigrade Scales—Continued

| Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 405. | 207.22 | 444. | 228.89 | 483. | 250.56 | 521.60 | 272. |
| 406. | 207.78 | 444.20 | 229. | 483.80 | 251. | 522. | 272.22 |
| 406.40 | 208. | 445. | 229.44 | 484. | 251.11 | 523. | 272.78 |
| 407. | 208.33 | 446. | 230. | 485. | 251.67 | 523.40 | 273. |
| 408. | 208.89 | 447. | 230.56 | 485.60 | 252. | 524. | 273.33 |
| 408.20 | 209. | 447.80 | 231. | 486. | 252.22 | 525. | 273.89 |
| 409. | 209.44 | 448. | 231.11 | 487. | 252.78 | 525.20 | 274. |
| 410. | 210. | 449. | 231.67 | 487.40 | 253. | 526. | 274.44 |
| 411. | 210.56 | 449.60 | 232. | 488. | 253.33 | 527. | 275. |
| 411.80 | 211. | 450. | 232.22 | 489. | 253.89 | 528. | 275.56 |
| 412. | 211.11 | 451. | 232.78 | 489.20 | 254. | 528.80 | 276. |
| 413. | 211.67 | 451.40 | 233. | 490. | 254.44 | 529. | 276.11 |
| 413.60 | 212. | 452. | 233.33 | 491. | 255. | 530. | 276.67 |
| 414. | 212.22 | 453. | 233.89 | 492. | 255.56 | 530.60 | 277. |
| 415. | 212.78 | 453.20 | 234. | 492.80 | 256. | 531. | 277.22 |
| 415.40 | 213. | 454. | 234.44 | 493. | 256.11 | 532. | 277.78 |
| 416. | 213.33 | 455. | 235. | 494. | 256.67 | 532.40 | 278. |
| 417. | 213.89 | 456. | 235.56 | 494.60 | 257. | 533. | 278.33 |
| 417.20 | 214. | 456.80 | 236. | 495. | 257.22 | 534. | 278.89 |
| 418. | 214.44 | 457. | 236.11 | 496. | 257.78 | 534.20 | 279. |
| 419. | 215. | 458. | 236.67 | 496.40 | 258. | 535. | 279.44 |
| 420. | 215.56 | 458.60 | 237. | 497. | 258.33 | 536. | 280. |
| 420.80 | 216. | 459. | 237.22 | 498. | 258.89 | 537. | 280.56 |
| 421. | 216.11 | 460. | 237.78 | 498.20 | 259. | 537.80 | 281. |
| 422. | 216.67 | 460.40 | 238. | 499. | 259.44 | 538. | 281.11 |
| 422.60 | 217. | 461. | 238.33 | 500. | 260. | 539. | 281.67 |
| 423. | 217.22 | 462. | 238.89 | 501. | 260.56 | 539.60 | 282. |
| 424. | 217.78 | 462.20 | 239. | 501.80 | 261. | 540. | 282.22 |
| 424.40 | 218. | 463. | 239.44 | 502. | 261.11 | 541. | 282.78 |
| 425. | 218.33 | 464. | 240. | 503. | 261.67 | 541.40 | 283. |
| 426. | 218.89 | 465. | 240.56 | 503.60 | 262. | 542. | 283.33 |
| 426.20 | 219. | 465.80 | 241. | 504. | 262.22 | 543. | 283.89 |
| 427. | 219.44 | 466. | 241.11 | 505. | 262.78 | 543.20 | 284. |
| 428. | 220. | 467. | 241.67 | 505.40 | 263. | 544. | 284.44 |
| 429. | 220.56 | 467.60 | 242. | 506. | 263.33 | 545. | 285. |
| 429.80 | 221. | 468. | 242.22 | 507. | 263.89 | 546. | 285.56 |
| 430. | 221.11 | 469. | 242.78 | 507.20 | 264. | 546.80 | 286. |
| 431. | 221.67 | 469.40 | 243. | 508. | 264.44 | 547. | 286.11 |
| 431.60 | 222. | 470. | 243.33 | 509. | 265. | 548. | 286.67 |
| 432. | 222.22 | 471. | 243.89 | 510. | 265.56 | 548.60 | 287. |
| 433. | 222.78 | 471.20 | 244. | 510.80 | 266. | 549. | 287.22 |
| 433.40 | 223. | 472. | 244.44 | 511. | 266.11 | 550. | 287.78 |
| 434. | 223.33 | 473. | 245. | 512. | 266.67 | 550.40 | 288. |
| 435. | 223.89 | 474. | 245.56 | 512.60 | 267. | 551. | 288.33 |
| 435.20 | 224. | 474.80 | 246. | 513. | 267.22 | 552. | 288.89 |
| 436. | 224.44 | 475. | 246.11 | 514. | 267.78 | 552.20 | 289. |
| 437. | 225. | 476. | 246.67 | 514.40 | 268. | 553. | 289.44 |
| 438. | 225.56 | 476.60 | 247. | 515. | 268.33 | 554. | 290. |
| 438.80 | 226. | 477. | 247.22 | 516. | 268.89 | 555. | 290.56 |
| 439. | 226.11 | 478. | 247.78 | 516.20 | 269. | 555.80 | 291. |
| 440. | 226.67 | 478.40 | 248. | 517. | 269.44 | 556. | 291.11 |
| 440.60 | 227. | 479. | 248.33 | 518. | 270. | 557. | 291.67 |
| 441. | 227.22 | 480. | 248.89 | 519. | 270.56 | 557.60 | 292. |
| 442. | 227.78 | 480.20 | 249. | 519.80 | 271. | 558. | 292.22 |
| 442.40 | 228. | 481. | 249.44 | 520. | 271.11 | 559. | 292.78 |
| 443. | 228.33 | 482. | 250. | 521. | 271.67 | 559.40 | 293. |

Equivalent Temperature Readings for Fahrenheit and Centigrade Scales—Continued

| Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 560. | 293.33 | 599. | 315. | 638. | 336.67 | 676.40 | 358. |
| 561. | 293.89 | 600. | 315.56 | 638.60 | 337. | 677. | 358.83 |
| 561.20 | 294. | 600.80 | 316. | 639. | 337.22 | 678. | 358.89 |
| 562. | 294.44 | 601. | 316.11 | 640. | 337.78 | 678.20 | 359. |
| 563. | 295. | 602. | 316.67 | 640.46 | 338. | 679. | 359.44 |
| 564. | 295.56 | 602.60 | 317. | 641. | 338.33 | 680. | 360. |
| 564.80 | 296. | 603. | 317.22 | 642. | 338.89 | 681. | 360.56 |
| 565. | 296.11 | 604. | 317.78 | 642.20 | 339. | 681.80 | 361. |
| 566. | 296.67 | 604.40 | 318. | 643. | 339.44 | 682. | 361.11 |
| 566.60 | 297. | 605. | 318.33 | 644. | 340. | 683. | 361.67 |
| 567. | 297.22 | 606. | 318.89 | 645. | 340.56 | 683.60 | 362. |
| 568. | 297.78 | 606.20 | 319. | 645.80 | 341. | 684. | 362.22 |
| 568.40 | 298. | 607. | 319.44 | 646. | 341.11 | 685. | 362.78 |
| 569. | 298.33 | 608. | 320. | 647. | 341.67 | 685.40 | 363. |
| 570. | 298.89 | 609. | 320.56 | 647.60 | 342. | 686. | 363.33 |
| 570.20 | 299 | 609.80 | 321. | 648. | 342.22 | 687. | 363.89 |
| 571. | 299.44 | 610. | 321.11 | 649. | 342.78 | 687.20 | 364. |
| 572. | 300. | 611. | 321.67 | 649.40 | 343. | 688. | 364.44 |
| 573. | 300.56 | 611.60 | 322. | 650. | 343.33 | 689. | 365. |
| 573.80 | 301. | 612. | 322.33 | 651. | 343.89 | 690. | 365.56 |
| 574. | 301.11 | 613. | 322.70 | 651.20 | 344. | 690.80 | 366. |
| 575. | 301.67 | 613.40 | 323. | 652. | 344.44 | 691. | 366.11 |
| 575.60 | 302. | 614. | 323.33 | 653. | 345. | 692. | 366.67 |
| 576. | 302.22 | 615. | 323.89 | 654. | 345.56 | 692.60 | 367. |
| 577. | 302.78 | 615.20 | 324. | 654.80 | 346. | 693. | 367.22 |
| 577.40 | 303. | 616. | 324.44 | 655. | 346.11 | 694. | 367.78 |
| 578. | 303.33 | 617. | 325. | 656. | 346.67 | 694.40 | 368. |
| 579. | 303.89 | 618. | 325.56 | 656.60 | 347. | 695. | 368.33 |
| 579.20 | 304. | 618.80 | 326. | 657. | 347.22 | 696. | 368.89 |
| 580. | 304.44 | 619. | 326.11 | 658. | 347.78 | 696.20 | 369. |
| 581. | 305. | 620. | 326.67 | 658.40 | 348. | 697. | 369.44 |
| 582. | 305.56 | 620.60 | 327. | 659. | 348.33 | 698. | 370. |
| 582.80 | 306. | 621. | 327.22 | 660. | 348.89 | 699. | 370.56 |
| 583. | 306.11 | 622. | 327.78 | 660.20 | 349. | 699.80 | 371. |
| 584. | 306.67 | 622.40 | 328. | 661. | 349.44 | 700. | 371.11 |
| 584.60 | 307. | 623. | 328.33 | 662. | 350. | 701. | 371.67 |
| 585. | 307.22 | 624. | 328.89 | 663. | 350.56 | 701.60 | 372. |
| 586. | 307.78 | 624.20 | 329. | 663.80 | 351. | 702. | 372.22 |
| 586.40 | 308. | 625. | 329.44 | 664. | 351.11 | 703. | 372.78 |
| 587. | 308.33 | 626. | 330. | 665. | 351.67 | 703.40 | 373. |
| 588. | 308.89 | 627. | 330.56 | 665.60 | 352. | 704. | 373.33 |
| 588.20 | 309. | 627.80 | 331. | 666. | 352.22 | 705. | 373.89 |
| 589. | 309.44 | 628. | 331.11 | 667. | 352.78 | 705.20 | 374. |
| 590. | 310. | 629. | 331.67 | 667.40 | 353. | 706. | 374.44 |
| 591. | 310.56 | 629.60 | 332. | 668. | 353.33 | 707. | 375. |
| 591.80 | 311. | 630. | 332.22 | 669. | 353.89 | 708. | 375.56 |
| 592. | 311.11 | 631. | 332.78 | 669.20 | 354. | 708.80 | 376. |
| 593. | 311.67 | 631.40 | 333. | 670. | 354.44 | 709. | 376.11 |
| 593.60 | 312. | 632. | 333.33 | 671. | 355. | 710. | 376.67 |
| 594. | 312.22 | 633. | 333.89 | 672. | 355.56 | 710.60 | 377. |
| 595. | 312.78 | 633.20 | 334. | 672.80 | 356. | 711. | 377.22 |
| 595.40 | 313. | 634. | 334.44 | 673. | 356.11 | 712. | 377.78 |
| 596. | 313.33 | 635. | 335. | 674. | 356.67 | 712.40 | 378. |
| 597. | 313.89 | 636. | 335.56 | 674.60 | 357. | 713. | 378.33 |
| 597.20 | 314. | 636.80 | 336. | 675. | 357.22 | 714. | 378.89 |
| 598. | 314.44 | 637. | 336.11 | 676. | 357.78 | 714.20 | 379. |

Equivalent Temperature Readings for Fahrenheit and Centigrade Scales—Continued

| Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 715. | 379.44 | 754. | 401.11 | 793. | 422.78 | 831.20 | 444. |
| 716. | 380. | 755. | 401.67 | 793.40 | 423. | 832. | 444.44 |
| 717. | 380.56 | 755.60 | 402. | 794. | 423.33 | 833. | 445. |
| 717.80 | 381. | 756. | 402.22 | 795. | 423.89 | 834. | 445.56 |
| 718. | 381.11 | 757. | 402.78 | 795.20 | 424. | 834.80 | 446. |
| 719. | 381.67 | 757.40 | 403. | 796. | 424.44 | 835. | 446.11 |
| 719.60 | 382. | 758. | 403.33 | 797. | 425. | 836. | 446.67 |
| 720. | 382.22 | 759. | 403.89 | 798. | 425.56 | 836.60 | 447. |
| 721. | 382.78 | 759.78 | 404. | 798.80 | 426. | 837. | 447.22 |
| 721.40 | 383. | 760. | 404.44 | 799. | 426.11 | 838. | 447.78 |
| 722. | 383.33 | 761. | 405. | 800. | 426.67 | 838.40 | 448. |
| 723. | 383.89 | 762. | 405.56 | 800.60 | 427. | 839. | 448.33 |
| 723.20 | 384. | 762.80 | 406. | 801. | 427.22 | 840. | 448.89 |
| 724. | 384.44 | 763. | 406.11 | 802. | 427.78 | 840.20 | 449. |
| 725. | 385. | 764. | 406.67 | 802.40 | 428. | 841. | 449.44 |
| 726. | 385.56 | 764.60 | 407. | 803. | 428.33 | 842. | 450. |
| 726.80 | 386. | 765. | 407.22 | 804. | 428.89 | 843. | 450.56 |
| 727. | 386.11 | 766. | 407.78 | 804.20 | 429. | 843.80 | 451. |
| 728. | 386.67 | 766.40 | 408. | 805. | 429.44 | 844. | 451.11 |
| 728.60 | 387. | 767. | 408.33 | 806. | 430. | 845. | 451.67 |
| 729. | 387.22 | 768. | 408.89 | 807. | 430.56 | 845.60 | 452. |
| 730. | 387.78 | 768.20 | 409. | 807.80 | 431. | 846. | 452.22 |
| 730.40 | 388. | 769. | 409.44 | 808. | 431.11 | 847. | 452.78 |
| 731. | 388.33 | 770. | 410. | 809. | 431.67 | 847.40 | 453. |
| 732. | 388.89 | 771. | 410.56 | 809.60 | 432. | 848. | 453.33 |
| 732.20 | 389. | 771.80 | 411. | 810. | 432.22 | 849. | 453.89 |
| 733. | 389.44 | 772. | 411.11 | 811. | 432.78 | 849.20 | 454. |
| 734. | 390. | 773. | 411.67 | 811.40 | 433. | 850. | 454.44 |
| 735. | 390.56 | 773.60 | 412. | 812. | 433.33 | 851. | 455. |
| 735.80 | 391. | 774. | 412.22 | 813. | 433.89 | 852. | 455.56 |
| 736. | 391.11 | 775. | 412.78 | 813.20 | 434. | 852.80 | 456. |
| 737. | 391.67 | 775.40 | 413. | 814. | 434.44 | 853. | 456.11 |
| 737.60 | 392. | 776. | 413.33 | 815. | 435. | 854. | 456.67 |
| 738. | 392.22 | 777. | 413.89 | 816. | 435.56 | 854.60 | 457. |
| 739. | 392.78 | 777.20 | 414. | 816.80 | 436. | 855. | 457.22 |
| 739.40 | 393. | 778. | 414.44 | 817. | 436.11 | 856. | 457.78 |
| 740. | 393.33 | 779. | 415. | 818. | 436.67 | 856.40 | 458. |
| 741. | 393.89 | 780. | 415.56 | 818.60 | 437. | 857. | 458.33 |
| 741.20 | 394. | 780.80 | 416. | 819. | 437.22 | 858. | 458.89 |
| 742. | 394.44 | 781. | 416.11 | 820. | 437.78 | 858.20 | 459. |
| 743. | 395. | 782. | 416.67 | 820.40 | 438. | 859. | 459.44 |
| 744. | 395.56 | 782.60 | 417. | 821. | 438.33 | 860. | 460. |
| 744.80 | 396. | 783. | 417.22 | 822. | 438.89 | 861. | 460.56 |
| 745. | 396.11 | 784. | 417.78 | 822.20 | 439. | 861.80 | 461. |
| 746. | 396.67 | 784.40 | 418. | 823. | 439.44 | 862. | 461.11 |
| 746.60 | 397. | 785. | 418.33 | 824. | 440. | 863. | 461.67 |
| 747. | 397.22 | 786. | 418.89 | 825. | 440.56 | 863.60 | 462. |
| 748. | 397.78 | 786.20 | 419. | 825.80 | 441. | 864. | 462.22 |
| 748.40 | 398. | 787. | 419.44 | 826. | 441.11 | 865. | 462.78 |
| 749. | 398.33 | 788. | 420. | 827. | 441.67 | 865.40 | 463. |
| 750. | 398.89 | 789. | 420.56 | 827.60 | 442. | 866. | 463.33 |
| 750.20 | 399. | 789.80 | 421. | 828. | 442.22 | 867. | 463.89 |
| 751. | 399.44 | 790. | 421.11 | 829. | 442.78 | 867.20 | 464. |
| 752. | 400. | 791. | 421.67 | 829.40 | 443. | 868. | 464.44 |
| 753. | 400.56 | 791.60 | 422. | 830. | 443.33 | 869. | 465. |
| 753.80 | 401. | 792. | 422.22 | 831. | 443.89 | 870. | 465.56 |

Equivalent Temperature Readings for Fahrenheit and Centigrade Scales—Continued

| Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 870.80 | 466. | 909. | 487.22 | 948. | 508.89 | 987. | 530.66 |
| 871. | 466.11 | 910. | 487.78 | 948.20 | 509. | 987.80 | 531. |
| 872. | 466.67 | 910.40 | 488. | 949. | 509.44 | 988. | 531.11 |
| 872.60 | 467. | 911. | 488.33 | 950. | 510. | 989. | 531.67 |
| 873. | 467.22 | 912. | 488.89 | 951. | 510.56 | 989.60 | 532. |
| 874. | 467.78 | 912.20 | 489. | 951.80 | 511. | 990. | 532.22 |
| 874.40 | 468. | 913. | 489.44 | 952. | 511.11 | 991. | 532.78 |
| 875. | 468.33 | 914. | 490. | 953. | 511.67 | 991.60 | 533. |
| 876. | 468.89 | 915. | 490.56 | 953.60 | 512. | 992. | 533.33 |
| 876.20 | 469. | 915.80 | 491. | 954. | 512.22 | 993. | 533.89 |
| 877. | 469.44 | 916. | 491.11 | 955. | 512.78 | 993.40 | 534. |
| 878. | 470. | 917. | 491.67 | 955.40 | 513. | 994. | 534.44 |
| 879. | 470.56 | 917.60 | 492. | 956. | 513.33 | 995. | 535. |
| 879.80 | 471. | 918. | 492.22 | 957. | 513.89 | 995.20 | 535.56 |
| 880. | 471.11 | 919. | 492.78 | 957.20 | 514. | 996. | 536. |
| 881. | 471.67 | 919.40 | 493. | 958. | 514.44 | 997. | 536.11 |
| 881.60 | 472. | 920. | 493.33 | 959. | 515. | 998. | 536.67 |
| 882. | 472.22 | 921. | 493.89 | 960. | 515.56 | 998.80 | 537. |
| 883. | 472.78 | 921.20 | 494. | 960.80 | 516. | 999. | 537.22 |
| 883.40 | 473. | 922. | 494.44 | 961. | 516.11 | 1000. | 537.78 |
| 884. | 473.33 | 923. | 495. | 962. | 516.67 | 1004. | 540. |
| 885. | 473.89 | 924. | 495.56 | 962.60 | 517. | 1010. | 543.33 |
| 885.20 | 474. | 924.80 | 496. | 963. | 517.22 | 1020. | 548.89 |
| 886. | 474.44 | 925. | 496.11 | 964. | 517.78 | 1022. | 550. |
| 887. | 475. | 926. | 496.67 | 964.40 | 518. | 1030. | 554.44 |
| 888. | 475.56 | 926.60 | 497. | 965. | 518.33 | 1040. | 560. |
| 888.80 | 476. | 927. | 497.22 | 966. | 518.89 | 1050. | 565.56 |
| 889. | 476.11 | 928. | 497.78 | 966.20 | 519. | 1058. | 570. |
| 890. | 476.67 | 928.40 | 498. | 967. | 519.44 | 1060. | 571.11 |
| 890.60 | 477. | 929. | 498.33 | 968. | 520. | 1070. | 576.67 |
| 891. | 477.22 | 930. | 498.89 | 969. | 520.56 | 1076. | 580. |
| 892. | 477.78 | 930.20 | 499. | 969.80 | 521. | 1080. | 582.22 |
| 892.40 | 478. | 931. | 499.44 | 970. | 521.11 | 1090. | 587.78 |
| 893. | 478.33 | 932. | 500. | 971. | 521.67 | 1094. | 590. |
| 894. | 478.89 | 933. | 500.56 | 971.60 | 522. | 1100. | 593.33 |
| 894.20 | 479. | 933.80 | 501. | 972. | 522.22 | 1110. | 598.89 |
| 895. | 479.44 | 934. | 501.11 | 973. | 522.78 | 1112. | 600. |
| 896. | 480. | 935. | 501.67 | 973.40 | 523. | 1120. | 604.44 |
| 897. | 480.56 | 935.60 | 502. | 974. | 523.33 | 1130. | 610. |
| 897.80 | 481. | 936. | 502.22 | 975. | 523.78 | 1140. | 615.56 |
| 898. | 481.11 | 937. | 502.78 | 975.20 | 524. | 1148. | 620. |
| 899. | 481.67 | 937.40 | 503. | 976. | 524.44 | 1150. | 621.11 |
| 899.60 | 482. | 938. | 503.33 | 977. | 525. | 1160. | 626.67 |
| 900. | 482.22 | 939. | 503.89 | 978. | 525.56 | 1166. | 630. |
| 901. | 482.78 | 939.20 | 504. | 978.80 | 526. | 1170. | 632.22 |
| 901.40 | 483. | 940. | 504.44 | 979. | 526.11 | 1180. | 637.78 |
| 902. | 483.33 | 941. | 505. | 980. | 526.67 | 1184. | 640. |
| 903. | 483.89 | 942. | 505.56 | 980.60 | 527. | 1190. | 643.33 |
| 903.20 | 484. | 942.80 | 506. | 981. | 527.22 | 1200. | 648.89 |
| 904. | 484.44 | 943. | 506.11 | 982. | 527.78 | 1202. | 650. |
| 905. | 485. | 944. | 506.67 | 982.40 | 528. | 1210. | 654.44 |
| 906. | 485.56 | 944.60 | 507. | 983. | 528.33 | 1220. | 660. |
| 906.80 | 486. | 945. | 507.22 | 984. | 528.89 | 1230. | 665.56 |
| 907. | 486.11 | 946. | 507.78 | 984.20 | 529. | 1238. | 670. |
| 908. | 486.67 | 946.40 | 508. | 985. | 529.44 | 1240. | 671.11 |
| 908.60 | 487. | 947. | 508.33 | 986. | 530. | 1250. | 676.67 |

Equivalent Temperature Readings for Fahrenheit and Centigrade Scales—Continued

| Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 1256. | 680. | 1640. | 893.33 | 2030. | 1110. | 2420. | 1326.67 |
| 1260. | 682.22 | 1650. | 898.89 | 2040. | 1115.56 | 2426. | 1330. |
| 1270. | 687.78 | 1652. | 900. | 2048. | 1120. | 2430. | 1332.22 |
| 1274. | 690. | 1660. | 904.44 | 2050. | 1121.11 | 2440. | 1337.78 |
| 1280. | 693.33 | 1670. | 910. | 2060. | 1126.67 | 2444. | 1340. |
| 1290. | 698.89 | 1680. | 915.56 | 2066. | 1130. | 2450. | 1343.33 |
| 1292. | 700. | 1688. | 920. | 2070. | 1132.22 | 2460. | 1348.89 |
| 1300. | 704.44 | 1690. | 921.11 | 2080. | 1137.78 | 2462. | 1350. |
| 1310. | 710. | 1700. | 926.67 | 2084. | 1140. | 2470. | 1354.44 |
| 1320. | 715.56 | 1706. | 930. | 2090. | 1143.33 | 2480. | 1360. |
| 1328. | 720. | 1710. | 932.22 | 2100. | 1148.89 | 2490. | 1365.56 |
| 1330. | 721.11 | 1720. | 937.78 | 2102. | 1150. | 2498. | 1370. |
| 1340. | 726.67 | 1724. | 940. | 2110. | 1154.44 | 2500. | 1371.11 |
| 1346. | 730. | 1730. | 943.33 | 2120. | 1160. | 2510. | 1376.67 |
| 1350. | 732.22 | 1740. | 948.89 | 2130. | 1165.56 | 2516. | 1380. |
| 1360. | 737.78 | 1742. | 950. | 2138. | 1170. | 2520. | 1382.22 |
| 1364. | 740. | 1750. | 954.44 | 2140. | 1171.11 | 2530. | 1387.78 |
| 1370. | 743.33 | 1760. | 960. | 2150. | 1176.67 | 2534. | 1390. |
| 1380. | 748.89 | 1770. | 965.56 | 2156. | 1180. | 2540. | 1393.33 |
| 1382. | 750. | 1778. | 970. | 2160. | 1182.22 | 2550. | 1398.89 |
| 1390. | 754.44 | 1780. | 971.11 | 2170. | 1187.78 | 2552. | 1400. |
| 1400. | 760. | 1790. | 976.67 | 2174. | 1190. | 2560. | 1404.44 |
| 1410. | 765.56 | 1796. | 980. | 2180. | 1193.33 | 2570. | 1410. |
| 1418. | 770. | 1800. | 982.22 | 2190. | 1198.89 | 2580. | 1415.56 |
| 1420. | 771.11 | 1810. | 987.78 | 2192. | 1200. | 2588. | 1420. |
| 1430. | 776.67 | 1814. | 990. | 2200. | 1204.44 | 2590. | 1421.11 |
| 1436. | 780. | 1820. | 993.33 | 2210. | 1210. | 2600. | 1426.67 |
| 1440. | 782.22 | 1830. | 998.89 | 2220. | 1215.56 | 2606. | 1430. |
| 1450. | 787.78 | 1822. | 1000. | 2228. | 1220. | 2610. | 1432.22 |
| 1454. | 790. | 1840. | 1004.44 | 2230. | 1221.11 | 2620. | 1437.78 |
| 1460. | 793.33 | 1850. | 1010. | 2240. | 1226.67 | 2624. | 1440. |
| 1470. | 798.89 | 1850. | 1015.56 | 2246. | 1230. | 2630. | 1443.33 |
| 1472. | 800. | 1858. | 1020. | 2250. | 1232.22 | 2640. | 1448.89 |
| 1480. | 804.44 | 1870. | 1021.11 | 2250. | 1237.78 | 2642. | 1450. |
| 1490. | 810. | 1880. | 1026.67 | 2264. | 1240. | 2650. | 1454.44 |
| 1500. | 815.56 | 1886. | 1030. | 2270. | 1243.33 | 2660. | 1460. |
| 1508. | 820. | 1890. | 1032.22 | 2280. | 1248.89 | 2670. | 1465.56 |
| 1510. | 821.11 | 1900. | 1037.78 | 2282. | 1250. | 2678. | 1470. |
| 1520. | 826.67 | 1904. | 1040. | 2290. | 1254.44 | 2680. | 1471.11 |
| 1526. | 830. | 1910. | 1043.33 | 2300. | 1260. | 2690. | 1476.67 |
| 1530. | 832.22 | 1920. | 1048.89 | 2310. | 1265.56 | 2696. | 1480. |
| 1540. | 837.78 | 1922. | 1050. | 2318. | 1270. | 2700. | 1482.22 |
| 1544. | 840. | 1930. | 1054.44 | 2320. | 1271.11 | 2710. | 1487.78 |
| 1550. | 843.33 | 1940. | 1060. | 2330. | 1276.67 | 2714. | 1490. |
| 1560. | 848.89 | 1950. | 1065.56 | 2336. | 1280. | 2720. | 1493.33 |
| 1562. | 850. | 1958. | 1070. | 2340. | 1282.22 | 2730. | 1498.89 |
| 1570. | 854.44 | 1960. | 1071.11 | 2350. | 1287.78 | 2732. | 1500. |
| 1580. | 860. | 1970. | 1076.67 | 2354. | 1290. | 2740. | 1504.44 |
| 1590. | 865.56 | 1976. | 1080. | 2360. | 1293.33 | 2750. | 1510. |
| 1598. | 870. | 1980. | 1082.22 | 2370. | 1298.89 | 2760. | 1515.56 |
| 1600. | 871.11 | 1990. | 1087.78 | 2372. | 1300. | 2768. | 1520. |
| 1610. | 876.67 | 1994. | 1090. | 2380. | 1304.44 | 2770. | 1521.11 |
| 1616. | 880. | 2000. | 1093.33 | 2390. | 1310. | 2780. | 1526.67 |
| 1620. | 882.22 | 2010. | 1098.89 | 2400. | 1315.56 | 2786. | 1530. |
| 1630. | 887.78 | 2012. | 1100. | 2408. | 1320. | 2790. | 1532.22 |
| 1634. | 890. | 2020. | 1104.44 | 2410. | 1321.11 | 2800. | 1537.78 |

Equivalent Temperature Readings for Fahrenheit and Centigrade Scales—Continued

| Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. | Fahrenheit Degs. | Centigrade Degs. |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 2804. | 1540. | 3010. | 1654.44 | 3220. | 1771.11 | 3430. | 1887.78 |
| 2810. | 1543.33 | 3020. | 1660. | 3230. | 1776.67 | 3434. | 1890. |
| 2820. | 1548.89 | 3030. | 1665.56 | 3236. | 1780. | 3440. | 1893.33 |
| 2822. | 1550. | 3038. | 1670. | 3240. | 1782.22 | 3450. | 1898.89 |
| 2830. | 1554.44 | 3040. | 1671.11 | 3250. | 1787.78 | 3452. | 1900. |
| 2840. | 1560. | 3050. | 1676.67 | 3254. | 1790. | 3460. | 1904.44 |
| 2850. | 1565.56 | 3056. | 1680. | 3260. | 1793.33 | 3470. | 1910. |
| 2858. | 1570. | 3060. | 1682.22 | 3270. | 1798.89 | 3480. | 1915.56 |
| 2860. | 1571.11 | 3070. | 1687.78 | 3272. | 1800. | 3488. | 1920. |
| 2870. | 1576.67 | 3074. | 1690. | 3280. | 1804.44 | 3490. | 1921.11 |
| 2876. | 1580. | 3080. | 1693.33 | 3290. | 1810. | 3500. | 1926.67 |
| 2880. | 1582.22 | 3070. | 1698.89 | 3300. | 1815.56 | 3506. | 1930 |
| 2890. | 1587.78 | 3092. | 1700. | 3363. | 1820. | 3510. | 1932.22 |
| 2894. | 1590. | 3100. | 1704.44 | 3310. | 1821.11 | 3520. | 1937.78 |
| 2900. | 1593.33 | 3110. | 1710. | 3320. | 1826.67 | 3524. | 1949. |
| 2910. | 1598.89 | 3120. | 1715.56 | 3326. | 1830. | 3530. | 1943.33 |
| 2912. | 1600. | 3128. | 1720. | 3330. | 1832.22 | 3540. | 1948.89 |
| 2920. | 1604.44 | 3130. | 1721.11 | 3340. | 1837.78 | 3542. | 1950. |
| 2930. | 1610. | 3140. | 1726.67 | 3344. | 1840. | 3550. | 1954.44 |
| 2940. | 1615.56 | 3146. | 1730. | 3350. | 1843.33 | 3560. | 1960. |
| 2948. | 1620. | 3150. | 1732.22 | 3360. | 1848.89 | 3570. | 1965.56 |
| 2950. | 1621.11 | 3160. | 1737.78 | 3362. | 1850. | 3578. | 1970. |
| 2960. | 1626.67 | 3164. | 1740. | 3370. | 1854.44 | 3580. | 1971.11 |
| 2966. | 1630. | 3170. | 1743.33 | 3380. | 1860. | 3590. | 1976.67 |
| 2970. | 1632.22 | 3180. | 1748.89 | 3390. | 1865.56 | 3596. | 1980. |
| 2980. | 1637.78 | 3182. | 1750. | 3398. | 1870. | 3600. | 1982.22 |
| 2984. | 1640. | 3190. | 1754.44 | 3400. | 1871.11 | 3610. | 1987.78 |
| 2990. | 1643.33 | 3200. | 1760. | 3410. | 1876.67 | 3614. | 1990. |
| 3000. | 1648.89 | 3210. | 1765.56 | 3416. | 1880. | 3620. | 1993.33 |
| 3002. | 1650. | 3218. | 1770. | 3420. | 1882.22 | 3630. | 1998.89 |

Specific Gravity Equivalents for Degrees Baumé for Liquids Heavier than Water

Table adopted by the U. S. Bureau of Standards from the formula:

$$\text{Degrees Baumé} = 145 - \frac{145}{\text{Specific Gravity} - \frac{60^\circ}{60^\circ}}$$

| Baumé. | Specific Gravity. | Lbs. per Gallon. | Baumé. | Specific Gravity. | Lbs. per Gallon. | Baumé. | Specific Gravity. | Lbs. per Gallon. | Baumé. | Specific Gravity. | Lbs. per Gallon. |
|--------|-------------------|------------------|--------|-------------------|------------------|--------|-------------------|------------------|--------|-------------------|------------------|
| 0 | 1.0000 | 8.33 | 19 | 1.1508 | 9.59 | 38 | 1.3551 | 11.29 | 57 | 1.6477 | 13.72 |
| 1 | 1.0069 | 8.38 | 20 | 1.1600 | 9.67 | 39 | 1.3679 | 11.33 | 58 | 1.6667 | 13.87 |
| 2 | 1.0140 | 8.46 | 21 | 1.1694 | 9.74 | 40 | 1.3810 | 11.51 | 59 | 1.6860 | 14.04 |
| 3 | 1.0211 | 8.51 | 22 | 1.1789 | 9.81 | 41 | 1.3942 | 11.61 | 60 | 1.7059 | 14.21 |
| 4 | 1.0284 | 8.56 | 23 | 1.1885 | 9.90 | 42 | 1.4078 | 11.72 | 61 | 1.7262 | 14.38 |
| 5 | 1.0357 | 8.63 | 24 | 1.1983 | 9.99 | 43 | 1.4216 | 11.84 | 62 | 1.7470 | 14.55 |
| 6 | 1.0432 | 8.69 | 25 | 1.2083 | 10.07 | 44 | 1.4356 | 11.96 | 63 | 1.7683 | 14.72 |
| 7 | 1.0507 | 8.75 | 26 | 1.2185 | 10.16 | 45 | 1.4500 | 12.08 | 64 | 1.7901 | 14.91 |
| 8 | 1.0584 | 8.81 | 27 | 1.2288 | 10.24 | 46 | 1.4646 | 12.21 | 65 | 1.8125 | 15.10 |
| 9 | 1.0662 | 8.88 | 28 | 1.2393 | 10.32 | 47 | 1.4796 | 12.33 | 66 | 1.8354 | 15.29 |
| 10 | 1.0741 | 8.94 | 29 | 1.2500 | 10.41 | 48 | 1.4948 | 12.46 | 67 | 1.8590 | 15.48 |
| 11 | 1.0821 | 9.01 | 30 | 1.2609 | 10.51 | 49 | 1.5104 | 12.58 | 68 | 1.8831 | 15.68 |
| 12 | 1.0902 | 9.09 | 31 | 1.2719 | 10.59 | 50 | 1.5263 | 12.72 | 69 | 1.9079 | 15.89 |
| 13 | 1.0985 | 9.15 | 32 | 1.2832 | 10.69 | 51 | 1.5426 | 12.85 | 70 | 1.9333 | 16.10 |
| 14 | 1.1069 | 9.21 | 33 | 1.2946 | 10.78 | 52 | 1.5591 | 12.99 | 71 | 1.9595 | 16.32 |
| 15 | 1.1154 | 9.29 | 34 | 1.3063 | 10.84 | 53 | 1.5761 | 13.13 | 72 | 1.9864 | 16.55 |
| 16 | 1.1240 | 9.36 | 35 | 1.3182 | 10.98 | 54 | 1.5934 | 13.27 | 73 | 2.0139 | 16.78 |
| 17 | 1.1328 | 9.43 | 36 | 1.3303 | 11.09 | 55 | 1.6111 | 13.42 | 74 | 2.0423 | 17.01 |
| 18 | 1.1417 | 9.51 | 37 | 1.3426 | 11.18 | 56 | 1.6292 | 13.57 | 75 | 2.0714 | 17.25 |

*All densities taken at temperature of 60° F. and referred to distilled water at 60° F. as standard.

Specific Gravity Equivalents for Degrees Baumé for Liquids Lighter than Water

Table adopted by the U. S. Bureau of Standards from the formula:

$$\text{Degrees Baumé} = \frac{140}{\frac{\text{Specific Gravity} - 1}{60^\circ} - 130}$$

$$^*\text{Specific Gravity} = \frac{60^\circ}{\frac{140}{\text{Degrees Baumé}} + 130} + 1$$

| Baumé. | Specific Gravity. | Lbs. per Gallon. | Baumé. | Specific Gravity. | Lbs. per Gallon. | Baumé. | Specific Gravity. | Lbs. per Gallon. | Baumé. | Specific Gravity. | Lbs. per Gallon. |
|--------|-------------------|------------------|--------|-------------------|------------------|--------|-------------------|------------------|--------|-------------------|------------------|
| 10 | 1.0000 | 8.33 | 36 | 0.8434 | 7.03 | 61 | 0.7330 | 6.11 | 86 | 0.6481 | 5.40 |
| 11 | 0.9929 | 8.27 | 37 | 0.8383 | 6.98 | 62 | 0.7292 | 6.07 | 87 | 0.6452 | 5.38 |
| 12 | 0.9859 | 8.21 | 38 | 0.8333 | 6.94 | 63 | 0.7254 | 6.04 | 88 | 0.6422 | 5.36 |
| 13 | 0.9790 | 8.16 | 39 | 0.8284 | 6.90 | 64 | 0.7216 | 6.01 | 89 | 0.6393 | 5.33 |
| 14 | 0.9722 | 8.10 | 40 | 0.8235 | 6.86 | 65 | 0.7179 | 5.98 | 90 | 0.6364 | 5.30 |
| 15 | 0.9655 | 8.04 | 41 | 0.8187 | 6.82 | 66 | 0.7143 | 5.95 | 91 | 0.6335 | 5.28 |
| 16 | 0.9589 | 7.99 | 42 | 0.8140 | 6.78 | 67 | 0.7107 | 5.92 | 92 | 0.6306 | 5.25 |
| 17 | 0.9524 | 7.93 | 43 | 0.8092 | 6.74 | 68 | 0.7071 | 5.89 | 93 | 0.6278 | 5.23 |
| 18 | 0.9459 | 7.88 | 44 | 0.8046 | 6.70 | 69 | 0.7035 | 5.86 | 94 | 0.6250 | 5.21 |
| 19 | 0.9396 | 7.83 | 45 | 0.8000 | 6.66 | 70 | 0.7000 | 5.83 | 95 | 0.6222 | 5.18 |
| 20 | 0.9333 | 7.78 | 46 | 0.7955 | 6.63 | 71 | 0.6965 | 5.80 | 96 | 0.6195 | 5.16 |
| 21 | 0.9272 | 7.72 | 47 | 0.7910 | 6.59 | 72 | 0.6931 | 5.78 | 97 | 0.6167 | 5.14 |
| 22 | 0.9211 | 7.67 | 48 | 0.7865 | 6.55 | 73 | 0.6897 | 5.75 | 98 | 0.6140 | 5.11 |
| 23 | 0.9150 | 7.62 | 49 | 0.7821 | 6.52 | 74 | 0.6863 | 5.72 | 99 | 0.6114 | 5.09 |
| 24 | 0.9091 | 7.57 | 50 | 0.7778 | 6.48 | 75 | 0.6829 | 5.69 | 100 | 0.6087 | 5.07 |
| 25 | 0.9032 | 7.53 | 51 | 0.7735 | 6.44 | 76 | 0.6796 | 5.66 | 101 | 0.6061 | 5.05 |
| 26 | 0.8974 | 7.48 | 52 | 0.7692 | 6.41 | 77 | 0.6763 | 5.63 | 102 | 0.6034 | 5.03 |
| 27 | 0.8917 | 7.43 | 53 | 0.7650 | 6.37 | 78 | 0.6731 | 5.60 | 103 | 0.6009 | 5.00 |
| 28 | 0.8861 | 7.38 | 54 | 0.7609 | 6.34 | 79 | 0.6699 | 5.58 | 104 | 0.5983 | 4.98 |
| 29 | 0.8805 | 7.34 | 55 | 0.7568 | 6.30 | 80 | 0.6667 | 5.55 | 105 | 0.5957 | 4.96 |
| 30 | 0.8750 | 7.29 | 56 | 0.7527 | 6.27 | 81 | 0.6635 | 5.52 | 106 | 0.5932 | 4.94 |
| 31 | 0.8696 | 7.24 | 57 | 0.7487 | 6.24 | 82 | 0.6604 | 5.50 | 107 | 0.5907 | 4.92 |
| 32 | 0.8642 | 7.20 | 58 | 0.7447 | 6.20 | 83 | 0.6573 | 5.48 | 108 | 0.5882 | 4.90 |
| 33 | 0.8589 | 7.15 | 59 | 0.7407 | 6.17 | 84 | 0.6542 | 5.45 | 109 | 0.5858 | 4.88 |
| 34 | 0.8537 | 7.11 | 60 | 0.7368 | 6.14 | 85 | 0.6512 | 5.42 | 110 | 0.5833 | 4.86 |
| 35 | 0.8485 | 7.07 | | | | | | | | | |

*All densities taken at temperature of 60° F. and referred to distilled water at standard.

Definitions of Units

ACTIVITY. Power or rate of doing work; unit: the watt.

AMPERE. Unit of electrical current. The international ampere, "which is one-tenth of the unit of current of the C.G.S. system of electromagnetic units, and which is represented sufficiently well for practical use by the unvarying current which, when passed through a solution of nitrate of silver in water, and in accordance with accompanying specifications, deposits silver at the rate of 0.001118 of a gram per second."

The ampere = 1 coulomb per second = 1 volt through 1 ohm = 10^{-1}

E. M. U. = 3×10^9 E. S. U. (E. M. U. = C. G. S. electromagnetic units. E. S. U. = C. G. S. electrostatic units.)

Amperes = volts/ohms = watts/volts = (watts/ohms)¹.

Amperes \times volts = amperes² \times ohms = watts.

ANGSTROM. Unit of wave-length = 10^{-10} meter.

ATMOSPHERE. Unit of pressure.

English normal = 14.7 pounds per sq. in. = 29.929 in. = 760.18 mm. Hg. 32°F.

French normal = 760 mm. of Hg. 0° C. = 29.922 in. = 14.70 lbs. per sq. in.

BOUGIE DECIMALE. Photometric standard.

BRITISH THERMAL UNIT. Heat required to raise one pound of water at its temperature of maximum density, 1° F. = 252 gram-calories.

CALORY. Small calory = gram-calory = therm = quantity of heat required to raise one gram of water at its maximum density, one degree Centigrade.

Large calory = kilogram-calory = 1000 small calories = one kilogram of water raised one degree Centigrade at the temperature of maximum density.

CANDLE. Photometric standard.

CARAT. The diamond carat standard in U. S. = 200 milligrams. Old standard = 205.3 milligrams = 3.168 grains.

The gold carat: pure gold is 24 carats; a carat is 1/24 part.

CARCEL. Photometric standard.

CIRCULAR AREA. The square of the diameter = 1.2733 \times true area.

True area = 0.785398 \times circular area.

COULOMB. Unit of quantity. The international coulomb is the quantity of electricity transferred by a current of one international ampere in one second. $= 10^{-1}$ E. M. U. $= 3 \times 10^9$ E. S. U.

Coulombs = (volts-seconds)/ohms = amperes \times seconds.

CUBIT = 18 inches.

DAY. Mean solar day. = 1440 minutes = 86400 seconds = 1.0027379 sidereal day.

Sidereal day = 86164.10 mean solar seconds.

DIGIT. $3/4$ inch; $1/12$ the apparent diameter of the sun or moon.

DIOPTER. Unit of "power" of a lens. The number of diopters = the reciprocal of the focal length in meters.

DYNE. C. G. S. unit of force = that force which acting for one second on one gram produces a velocity of one centimeter per second.

= weight in grams divided by the acceleration of gravity in cm. per sec.

ELECTROCHEMICAL EQUIVALENT is the ratio of the mass in grams deposited in an electrolytic cell by an electrical current to the quantity of electricity.

ENERGY. *See* Erg.

ERG. C. G. S. unit of work and energy = one dyne acting through one centimeter.

FARAD. Unit of electrical capacity. The international farad is the capacity of a condenser charged to a potential of one international volt by one international coulomb of electricity. $= 10^9$ E. M. U. $= 9 \times 10^{11}$ E. S. U.

The one-millionth part of a farad (microfarad) is more commonly used.

Farads = coulombs/volts.

FOOT-POUND. The work which will raise one pound one foot high.

FOOT-POUNDAIS. The English unit of work = foot-pounds/g.

g. The acceleration produced by gravity.

GAUSS. A unit of intensity of magnetic field = 1 E. M. U. $= 1/3 \times 10^{-10}$ E. S. U.

GRAM-CENTIMETER. The gravitation unit of work = g. ergs.

GRAM-MOLECULE = x grams where x = molecular weight of substance.

GRAVITATION CONSTANT = G in formula $G \frac{m_1 m_2}{r} = 666.07 \times 10^{-10}$ cm.³/gr. sec.²

HEAT OF THE ELECTRIC CURRENT generated in a metallic circuit without self-induction is proportional to the quantity of electricity which has passed in coulombs multiplied by the fall of potential in volts, or is equal to (coulombs \times volts)/4.181 in small calories.

The heat in small or gram-calories per second = (amperes² \times ohms)/4.181 = volts²/ (ohms \times 4.181) = (volts \times amperes)/4.181 = watts/4.181.

HEAT. Absolute zero of heat = -273.13° C, -459.6° Fahrenheit, -218.5° Reaumur.

HEFNER UNIT. Photometric standard.

HENRY. Unit of induction. It is "the induction in a circuit when the electromotive force induced in this circuit is one international volt, while the inducing current varies at the rate of one ampere per second." = 10^9 E. M. U. = $1/9 \times 10^{-11}$ E. S. U.

HORSE-POWER. The practical unit of power = 33,000 pounds raised one foot per minute: = 550 ft. pds. per sec. = 0.746 kilowatt = 746 watts.

JOULE. Unit of work = 10^7 ergs.

Joules = (volts² \times seconds)/ohms = watts \times seconds = amperes² \times ohms \times sec.

JOULE'S EQUIVALENT. The mechanical equivalent of heat = 4.185×10^7 ergs.

KILODYNE. 1000 dynes. About 1 gram.

LUMEN. Unit of flux of light-candles divided by solid angles.

MEGABAR. Unit of pressure = 0.987 atmospheres.

MEGADYNE. One million dynes. About one kilogram.

METER CANDLE. The intensity lumination due to standard candle distant one meter.

MHO. The unit of electrical conductivity. It is the reciprocal of the ohm.

MICRO. A prefix indicating the millionth part.

MICROFARAD. One millionth of a farad, the ordinary measure of electrostatic capacity.

MICRON. (μ) = one millionth of a meter.

MIL. One thousandth of an inch.

MILLI-. A prefix denoting the thousandth part.

MONTH. The anomalistic month = time of revolution of the moon from one perigee to another = 27.55460 days.

The nodical month = draconitic month = time of revolution from a node to the same node again = 27.21222 days.

The sidereal month = the time of revolution referred to the stars = 27.32166 days (mean value), but varies by about three hours on account of the eccentricity of the orbit and "perturbations."

The synodic month = the revolution from one new moon to another = 29.5306 days (mean value) = the ordinary month. It varies by about 13 hours.

OHM. Unit of electrical resistance. The international ohm is based upon the ohm equal to 10^9 units of resistance of the C. G. S. system of electromagnetic units, and "is represented by the resistance offered to an unvarying electric current by a column of mercury, at the tem-

- perature of melting ice, 14.4521 grams in mass, of a constant cross section and of the length of 106.3 centimeters." = 10^9 E. M. U. = $1/9 \times 10^{-11}$ E. S. U.
- International ohm = 1.01367 B. A. ohms = 1.06022 Siemens' ohms.
 B. A. ohm = 0.98651 international ohms.
 Siemens' ohm = 0.94080 international ohms.
- PENTANE CANDLE. Photometric standard.
- PI = π = ratio of the circumference of a circle to the diameter = 3.14159265359.
- POUNDAL. The British unit of force. The force which will in one second impart a velocity of one foot per second to a mass of one pound.
- RADIAN = $180^\circ/\pi = 57.29578^\circ = 57^\circ 17' 45'' = 206265''$.
- SECOHM. A unit of self-induction = 1 second \times 1 ohm.
- THERM = small calory = quantity of heat required to warm one gram of water at its temperature of maximum density one degree Centigrade.
- THERMAL UNIT, BRITISH = the quantity of heat required to warm one pound of water at its temperature of maximum density one degree Fahrenheit = 252 gram-calories.
- VOLT. The unit of electromotive force (E. M. F.). The international volt is "the electromotive force that, steadily applied to a conductor whose resistance is one international ohm, will produce a current of one international ampere, and which is represented sufficiently well for practical use by 1000/1434 of the electromotive force between the poles or electrodes of the voltaic cell known as Clark's cell, at a temperature of 15° C. and prepared in the manner described in the accompanying specification." = 10^8 E. M. U. = $1/300$ E. S. U.
- VOLT-AMPERE. Equivalent to Watt/Power factor.
- WATT. The unit of electrical power = 10^7 units of power in the C. G. S. system. It is represented sufficiently well for practical use by the work done at the rate of one Joule per second.
- Watts = volts \times amperes = amperes² \times ohms = volts²/ohms (direct current or alternating current with no phase difference).
- Watts \times seconds = Joules.
- WEBER. A name formerly given to the coulomb.
- YEAR.
- | | | | | | | | | | |
|------------------|---|----------------------------|-------|---|--------|----|----------|----|--------------------|
| Anomalistic year | = | 365 | days, | 6 | hours, | 13 | minutes, | 48 | seconds. |
| Sidereal | " | = | 365 | " | 6 | " | 9 | " | 9.314 " |
| Ordinary | " | = | 365 | " | 5 | " | 48 | " | 46 $\frac{1}{2}$ " |
| Tropical | " | same as the ordinary year. | | | | | | | |

Transportation of Dangerous Articles other than Explosives by Freight *

For transportation purposes dangerous articles other than explosives are divided into the following groups:

1. Forbidden articles.
2. Acceptable articles.

Group 1.—Forbidden Articles

(a) Outside packages containing in the same compartment interior packages, the mixture of whose contents would be liable to cause a dangerous evolution of heat, gas, or corrosive materials.

(b) Cylinders containing gases capable of combining chemically.

(c) Packages containing dangerous articles in a leaking condition or in such an insecure condition as to make leakage probable during transit.

(d) Rags or cotton waste oily with more than 5 per cent of vegetable or animal oil, or wet rags, or wet textile waste, or wet paper stock.

(e) Charcoal screenings from wet charcoal, or wet screenings, or screenings that have been wet.

(f) Dangerous articles not properly packed, marked, labeled, described, and certified.

(g) Iron sponge that has not been properly oxidized during manufacture; and spent oxide or spent iron mass except when loaded in open steel cars.

Group 2.—Acceptable Articles

Inflammable Liquids—Red Label

This group includes any liquid or liquid mixture that gives off inflammable vapors (as determined by flash-point from Tagliabue's open-cup tester, as used for test of burning oils), at or below a temperature of 80° F.

Inflammable Solids—Yellow Label

This group includes all substances other than those classified as explosives that are liable under conditions incident to transportation to cause fires by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes.

Oxidizing Materials—Yellow Label

This group includes all substances, such as chlorates, permanganates, peroxides and nitrates, that yield oxygen readily to stimulate the combustion of organic matter.

This group includes the strong mineral acids (in strength greater than one-half concentrated, i.e., 47 per cent sulfuric, 34 per cent nitric, 20 per cent hydrochloric) and other strongly corrosive liquids that are

Corrosive Liquids—White Label

liable to cause fires when mixed with chemicals or with organic matter, or are liable, in case of leakage from their shipping containers, to damage other freight materially.

* "Regulations for the Transportation of Explosives and Other Dangerous Articles by Freight and Express"—Bureau of Explosives, 30 Vesey St., New York, September, 1918.

Compressed Gases—Red or Green (Gas) Label

This group includes all inflammable or non-inflammable gases assembled for shipment under pressure exceeding 25 pounds per square inch, except when such gases are in cylinders or tubes not exceeding seven-eighths inch outside diameter and of not more than 4 fluid ounces water capacity.*

Regulations for the Transportation of Dangerous Articles other than Explosives by Express.

For transportation by express, explosives and other dangerous articles other than explosives, are divided into the following groups:

1. Forbidden articles.
2. Acceptable dangerous articles.

Group 1.—Forbidden Articles

Except when shipped by the War or Navy Department of the United States Government in time of war or of threatened war, the following articles must not be shipped by express, except properly packed samples for laboratory examination, as provided in section 232 of the act of March 4, 1909.

- (a) Low explosives or black powder.
- (b) High explosives, including nitroglycerin explosives, dynamite, chlorate powders, nitrate of ammonia powders, dry picric acid, dry picrates, dry nitrocellulose (gun-cotton and negative cotton), dry nitro-starch, dry trinitrotoluol, dry tetranitroaniline or dry tetranitromethyl-aniline.
- (c) Smokeless powder.
- (d) Canceled.
- (e) Fulminate of mercury or of any other metal except as a component of manufactured articles whose transportation is not forbidden herein.
- (f) Blasting caps, including electric blasting caps.
- (g) Ammunition for cannon, with or without projectiles.
- (h) Detonating fuses.
- (i) Explosive projectiles, explosive bombs, explosive mines, explosive torpedoes.
- (j) Liquid nitroglycerin.
- (k) Fireworks that combine an explosive and a detonator or blasting cap.
- (l) Fireworks containing a match tip or head, or similar igniting point or surface, unless each such individual tip, head, igniting point, or surface is entirely covered and securely protected from accidental contact or friction with any other surface.
- (m) Fireworks that ignite spontaneously or undergo marked decomposition when subjected for 48 consecutive hours to the temperature of 75° C. (167° F.).
- (n) Firecrackers whose dimensions exceed 5 inches in length or

* Hand fire extinguishers containing non-liquefied gas for the purpose of extinguishing fire-extinguishing contents are excepted.

three-fourths inch in diameter, or whose explosive charges exceed 45 grains each in weight.

(o) Toy torpedoes exceeding $1\frac{1}{2}$ inches in diameter, or toy caps containing more than an average of thirty-five hundredths of a grain of explosive composition per cap. Toy torpedoes containing a cap composed of a mixture of red phosphorus and potassium chlorate exceeding an average of more than one-half (0.5) grain per cap.

(p) Fireworks that can be exploded *en masse* by a blasting cap placed in one of the units, or by impact of a rifle bullet, or otherwise.

(q) Explosives or other dangerous articles properly condemned by the Bureau of Explosives, except properly repacked samples for laboratory examination.

(r) Outside packages containing in the same compartment interior packages, the mixture of whose contents would be liable to cause a dangerous evolution of heat, gas, or corrosive materials.

(s) Cylinders containing gases capable of combining chemically.

(t) Packages containing a dangerous article in a leaky condition or in such an insecure condition as to make leakage probable during transit.

(u) Rags or cotton waste oily with more than 5 per cent of animal or vegetable oil, or wet rags, or wet textile waste, or wet paper stock.

(v) Boxes or kegs that have been previously used for high explosives must not again be used for shipments of any character.

(x) Carbon bisulfide, pyroxylin plastic scrap (celluloid, fiberloid, pyralin, viscoloid, zylonite, etc., scrap), charcoal screenings, and white or yellow phosphorus.

Group 2.—Acceptable Dangerous Articles

Inflammable Liquids—Red Label

This group includes all substances other than those classified as explosives that are liable under conditions incident to transportation to cause fires by self-ignition through friction, through absorption of moisture, or through spontaneous chemical changes.

Oxidizing Materials—Yellow Label

This group includes all substances such as chlorates, permanganates, peroxides and nitrates, that yield oxygen readily to stimulate the combustion of organic matter.

Corrosive Liquids—White Label

This group, including the strong mineral acids (in strength greater than one-fourth concentrated, i.e., 23 per cent sulfuric, 17 per cent nitric, 10 per cent hydrochloric), and other strongly corrosive liquids that are liable to cause fires when mixed with chemicals or with organic matter, or are liable, in case of leakage from their shipping containers, to damage other freight materially.

Compressed Gases—Red or Green (Gas) Label

This group includes all inflammable or non-inflammable gases assembled for shipment under pressure exceeding 25 pounds per square inch, except when such gases are in cylinders or tubes not exceeding $\frac{7}{8}$ inch outside diameter and of not more than 4 fluid ounces water capacity.

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